Founded in 1832

# RAILWAY LOCOMOTIVES AND CARS

AUGUST 1957

A SIMMONS-BOARDMAN **TIME-SAVER** PUBLICATION

*formerly* RAILWAY Mechanical and Electrical Engineer

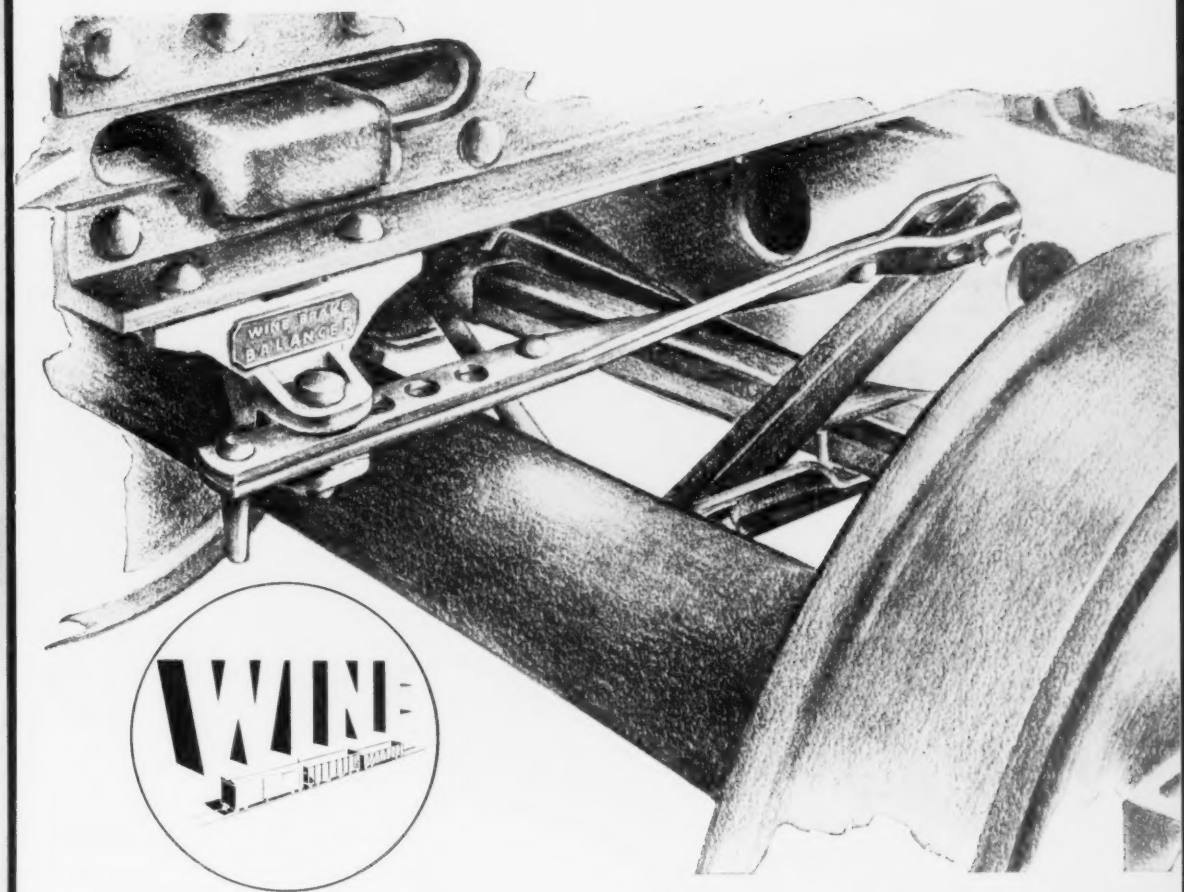
*CPR Coach Maintenance*

*Mech. Div. and Elec. Section Reports*

*N&W Cuts Hot Boxes*

*AC Brakes Being Tested*

**EQUALIZE BRAKE FORCES..**




WINE

BRAKE BALANCERS

**Eliminate truck distortion . .**
**Greatly reduce maintenance . .**

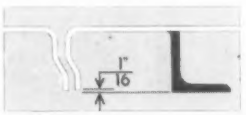
THE WINE RAILWAY APPLIANCE CO., TOLEDO 9, OHIO

P-S

# NAILABLE STEEL FLOOR

*Provides the Smoothest, Strongest Car Floor*

**RESISTS CRUSHING AND DISHING** — Pullman-Standard design incorporates the use of copper-bearing steel angle as plank support running the full length of each plank. This support gives the P-S floor exceptional strength . . . helps prevent crushing and dishing by heavy loaded lift trucks and racks.




**RIDGES CAN'T DEVELOP** — P-S design provides a 1/16" underframe clearance at each plank joint. This flexibility prevents planks from offsetting if there is any variation in plank depth. Smooth floor prevents package gouging and allows lift trucks to roll smoothly.

**GROOVES CAN'T LOSE NAIL HOLDING POWER** — Design of P-S floor prevents nailing grooves from deforming permanently. Grooves retain original holding power on 16d, 20d and 30d nails even after use of 40d nail.

- Section properties of the 10-gauge P-S floor reveal it to be nearly twice as strong as other steel floors.
- P-S Nailable Steel Floor is welded to car underframe on the copper-bearing steel reinforcement angles at plank center away from nailing groove. Welding can not affect groove filler . . . filler can not contaminate weld.
- P-S narrower planks with 6" groove centers provide greater strength and more nailing grooves.
- P-S flexible nailing joint springs back . . . retains original holding power even after use of 30d or 40d nails.

*For more detailed information* on this outstanding lading protection product . . . for more reasons why you should specify Pullman-Standard Nailable Steel Floor . . . for proof on how it minimizes floor maintenance, provides superior nail holding power and more nailing surface, write to Pullman-Standard or contact your nearest P-S sales office.

WORLD'S LARGEST BUILDER OF ROLLING STOCK

## PULLMAN-STANDARD

**CAR MANUFACTURING COMPANY**

SUBSIDIARY OF PULLMAN INCORPORATED

**221 N. LA SALLE STREET, CHICAGO 1, ILLINOIS**

BIRMINGHAM, PITTSBURGH, NEW YORK, SAN FRANCISCO, WASHINGTON

# Only Aeroquip Air Hose Lines

**Save 1/3**
**on Original Cost**
compared to external armored air hose

**Save 2/3**
**on Replacement Cost**
by reusing Aeroquip Hose Fittings

Only Aeroquip 1531 Air Hose Lines can combine extended service life with lower hose line costs. And, on replacement lines, Aeroquip Hose Fittings can be detached and reused again and again for even greater savings.

**LOCOMOTIVE MAINTENANCE costs are reduced on these lines:**

- main reservoir
- sanding
- brake pipe
- actuating
- independent application and release
- signal

**CAR MAINTENANCE costs are reduced on these applications:**

- intermediate brake pipe
- intermediate straight air
- intermediate signal line
- truck to brake cylinder
- brake cylinder car body to truck

**SEE US FOR FULL INFORMATION.** Visit the Aeroquip Booths, 315-318 at the Allied Railway Supply Association Convention, September 15-18, Chicago.

Aeroquip
REG. TRADEMARK

**AEROQUIP CORPORATION, JACKSON, MICHIGAN**
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# Big Load...Easy Lift

## *for Yellow Strand Braided Safety Slings*

Here's why Yellow Strand Braided Safety Slings make it easier to lift big loads:

**They're unusually flexible** – can be installed and removed more easily . . . resist kinks and twisting. They're strong – are made by a special Broderick & Bascom braiding process with proved, dependable Yellow Strand Wire Rope.

**They provide maximum safety** – safeguard employees, loads and equipment.

**They're available for any load** – for the routine lifts, unusual shape or size loads, extra heavy loads. Yellow Strand Slings can be specifically engineered for your individual needs.

Broderick & Bascom engineers will be glad to assist you with your sling problems.

***Yellow Strand***

**BRODERICK & BASCOM ROPE CO.**

*Manufacturers of Wire Rope for over 80 Years*

**4203 Union Blvd., St. Louis 15, Mo.**

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# RAILWAY LOCOMOTIVES AND CARS

Founded in 1832 as the American Rail-Road Journal

AUGUST 1957 VOLUME 131, No. 8

## MOTIVE POWER AND CAR

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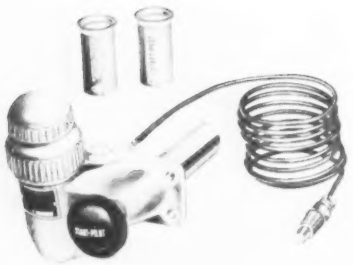
**NEXT MONTH:**

*AB Color Schematics*
*Coal-Burning Gas Turbine Locomotive*



## Starting Capsules

The Start Pilot, a diesel engine starting device, and aluminum multi-start capsules are said to be used extensively in Europe, eliminating the practice of running some engines constantly at night or during cold periods to assist other engines in their start-up period.

The unit's double action air pump allows the operator to follow through on the engine until continuous firing has been achieved. On certain types of engines it has been found advisable to use two Start Pilots, mounted on opposite sides of the cylinder block. *Start Pilot Corporation, Dept. RLC, Mineola, N. Y.*

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## Pneumatic Outlet

This valve, designed for covered hopper cars, in combination with the manufacturer's cast-steel frame and gate, is said to offer a new concept in unloading as there are two systems of unloading at the operator's disposal. The standard outlet permits the conventional gravity-flow bottom discharge system to be used, while the pneumatic valve allows the car to be unloaded by pneumatic conveyors. Either system requires only one man.

The valve was developed for sanitation and for easy unloading of dry, granular, or powdered commodities. According to the manufacturer, it can be applied to any existing covered hopper car provided it is equipped with proper discharge gates.. *Enterprise Railway Equipment Company, Dept RLC, 59 East Van Buren st., Chicago 5.*

## Steam Cleaning Liquid Detergents

Oakite LSD, a liquid detergent, has been designed for use in solution-lifting steam guns and self-generating steam cleaning equipment. It simplifies the preparation of steam cleaning solution, reduces the clogging of coils in self generating equipment, and will handle a wide variety of cleaning operations ranging from light to medium-heavy duty.

The detergent is said to provide effective soil removal at concentrations of 1 to 2 oz to each gallon of water as delivered by the gun. Used as recommended, it is said to be safe on steel, brass and magnesium, and to have no effect on painted surfaces. In the operating range, its solution has a pH of 12 and users report no offensive fumes. *Oakite Products, Inc., Dept. RLC, 146 Rector st., New York 6.*

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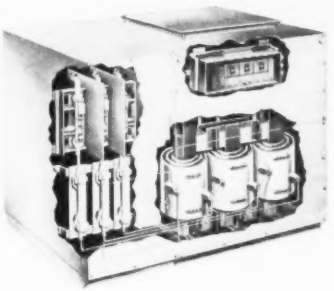

## One-Piece Electrical Load Centers

Illustrated is a cut-away view of a new single-unit integral electrical distribution center, requiring about 42 per cent less space than conventional distribution centers.

The center combines in one piece all three sections necessary for load center applications: incoming line, transformer, and outgoing feeder.

Designed to pass through normal-size shop doors in an upright position, the unit's installed height is 80 in. It is 10 in. lower than conventional centers. For moving purposes, the new unit is 78 in. high, because the 2-in. high shield over the air vent on top of the center is easily removed. It can be shipped, rolled and installed in one piece. It is 37½ to 42½ in. deep, and 56 to 106 in. wide.

A complete line of integral distribution centers is available in standard ratings of 75-, 112.5-, 150-, and 225-kva. Standard voltage ratings from 208 volts to 15,000 volts are available. *General Electric Company, Dept. RLC, Schenectady, N. Y.*

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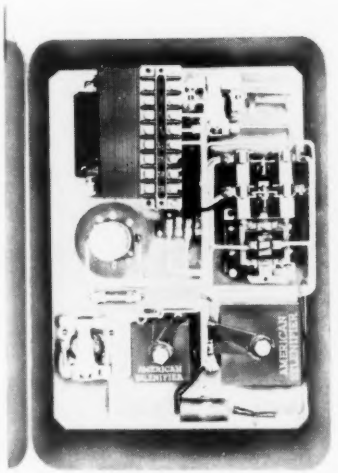


## All-Electric Motor Brake

An all-electric brake for use on any a-c motor from ¼ hp to 250 hp, and up, is now being introduced. Known as a Selenibrake, it is said to provide a surer stop than a mechanical brake. Unlike a mechanical brake, the Selenibrake can repeat its stopping cycle indefinitely without variation in braking torque.

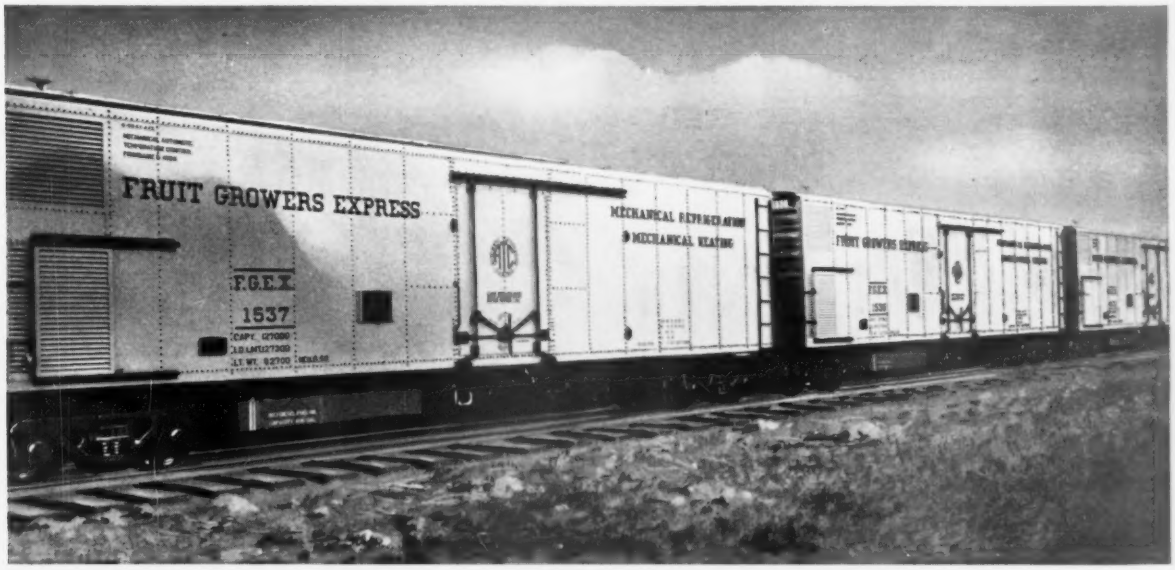
It can be supplied for any voltages up to 600 volts either 60, 50 or 25 cycles. No connection of any kind is made to the motor itself. It is applied to the standard starter of the motor by means of six connections. Since it is installed away from the motor, cramped motor space presents no problem.

The unit employs a principle of operation which offers advantages over conventional mechanical brakes as well as ordinary electrical brakes using the same system of operation. Braking torque may be adjusted over a wide range, and it can be applied to any motor starter at any time. It is claimed to be safer than plugging and can be applied to a single- or three-phase motor with slight modification in its internal connection.

The brake is housed in standard metal

(*Continued on page 66*)

# 80,000,000 CAR MILES WITHOUT A SINGLE HOTBOX




## 1,527 FRUIT GROWERS EXPRESS AND ASSOCIATED COMPANIES CARS SET RECORD ON HYATT HY-ROLLS

### 4 Key Reasons Why Hy-Rolls Are So Dependable, Economical

The Hy-Roll design is the culmination of HYATT'S experience in building more time-tested straight cylindrical roller bearings than any other maker. It has four key features:

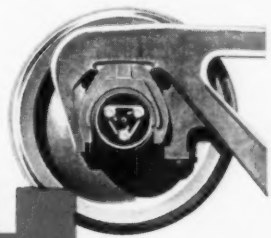
1. Straight cylindrical rollers provide greater load carrying capacity and longer life.
2. Fewer parts simplify maintenance.
3. Generous race flanges absorb lateral thrusts.
4. Positive seals retain 3-year grease supply, prevent damage from foreign matter.

As of June 1, 1957, 1,527 FGE-WFE-BRE cars equipped with HYATT Hy-Roll Bearings have established an enviable performance record: over *eighty million* car miles without a single hotbox. 102 of these reefers have been in continuous service since May, 1953; the remainder joined the combined FGE-WFE-BRE fleet during 1953-1957.

### 1,000 New Cars Hyatt-Equipped

When FGE-WFE-BRE officials recently decided to equip their latest 1,000 cars with roller bearings, they again selected HYATT Hy-Rolls. Their decision was based on the millions of hotbox-free miles already accumulated on their Hy-Roll-equipped cars, and the ever-growing demand for *on time* delivery of high-value lading.

HYATT Hy-Roll Bearings for freight cars are *proved by performance*. Why not let us prove their value for you on your equipment? Call or write Hyatt Bearings Division, General Motors Corp., Harrison, N. J.



Another GM contribution to railroad progress

**HYATT HY-ROLL BEARINGS**
**FOR NON-STOP FREIGHT**

## New Shop Facilities

The *Illinois Terminal* is extending its diesel shop facilities at Federal, a suburb of Alton, Ill., at a cost of about $200,000. The project is scheduled for completion about December 1.

The *McCloud River* has completed construction of a combination diesel-car repair shop at a cost of approximately $155,000. The building, 120 ft by 18 ft, is equipped with a 10-ton traveling overhead crane.

## Atlantic City Meetings Planned

Plans are being discussed for simultaneous meetings of the AAR Mechanical Division; the Electrical Section, Mechanical and Engineering Divisions; and the Purchases and Stores Division, AAR, at Atlantic City in June 1959. Coincident with the meetings would be exhibits of mechanical and other products under the sponsorship of the Railway Supply Manufacturers' Association. The plans are still in the making and no definite dates have been established.

## Southern PS-1 Box Cars Have Steel Lining—Correction

In the article, "Southern PS-1 Box Cars Have Steel Lining," which appears on pages 46 and 47 of the June issue of Railway Locomotives and Cars, the sentence on page 47, third line from the states the cars are equipped with P-S nailable steel floor. This should read the cars are equipped with Stran NSF Steel flooring. 1,200 PS-1 box cars built in 1955 for the Southern were so equipped with 230 scheduled for 1957.

## Plans for an 'Airail' Car

Plans for an 'airail' car that would be gasoline-powered, driven by a propeller in the rear and stabilized by fins, have been announced by an aircraft company. The car would hang beneath a "safety rail" and could be operated in either single or multiple units.

## Miscellaneous Publications

AAR REFRIGERATOR CAR FAN SYSTEM REPORT.—Mechanical Research Report MR-230—Laboratory Performance Tests on Two Types of Electric Fan Systems for Refrigerator special plenum chamber, constructed at the laboratory, of a size duplicating one-half of a standard 40-ft refrigerator car. Cars, dated May 1957, contains test data obtained through the use of a *Fred Peronto, secretary, Mechanical division, Association of American Railroads, 59 East Van Buren st, Chicago 5, copies to members, $2.00 each, to other than members, $4.00 each.*

## SUMMARY OF MONTHLY HOT BOX REPORTS

| | Foreign and system freight car mileage (thousands) | No. of cars set off between division terminals because of hot boxes | | | Miles car set off |
|---|---|---|---|---|---|
| | | System | Foreign | Total | |
| April, 1953 | 2,850,753 | 3,383 | 6,435 | 9,818 | 290,359 |
| April, 1954 | 2,570,519 | 3,079 | 5,149 | 8,228 | 312,411 |
| 1955 | | | | | |
| April | 2,787,705 | 3,471 | 6,485 | 9,956 | 280,002 |
| May | 2,931,850 | 4,860 | 8,664 | 13,524 | 216,788 |
| June | 2,945,955 | 6,080 | 10,226 | 16,306 | 180,666 |
| July | 2,906,558 | 8,086 | 13,635 | 21,721 | 133,813 |
| August | 2,954,439 | 8,555 | 14,358 | 22,913 | 128,941 |
| September | 2,923,592 | 5,896 | 10,469 | 16,365 | 178,649 |
| October | 3,025,177 | 3,966 | 7,182 | 11,148 | 271,364 |
| November | 2,950,228 | 2,010 | 3,972 | 5,982 | 493,184 |
| December | 2,922,034 | 1,819 | 3,774 | 5,593 | 522,444 |
| 1956 | | | | | |
| January | 2,925,109 | 2,029 | 4,302 | 6,331 | 462,029 |
| February | 2,794,161 | 2,570 | 5,611 | 8,181 | 341,542 |
| March | 3,027,684 | 2,517 | 6,212 | 8,729 | 346,853 |
| April | 2,930,389 | 3,202 | 6,881 | 10,083 | 290,626 |
| May | 3,063,427 | 4,672 | 10,903 | 15,575 | 196,688 |
| June | 2,973,732 | 6,777 | 15,125 | 21,902 | 135,774 |
| July | 2,788,347 | 8,484 | 16,067 | 24,551 | 113,573 |
| August | 3,039,173 | 9,891 | 16,892 | 26,783 | 113,474 |
| September | 2,918,875 | 6,834 | 12,629 | 19,463 | 149,970 |
| October | 3,113,460 | 4,357 | 8,429 | 12,786 | 243,505 |
| November | 2,953,625 | 2,650 | 5,560 | 8,210 | 359,759 |
| December | 2,933,940 | 2,256 | 4,436 | 6,692 | 438,425 |
| 1957 | | | | | |
| January | 2,767,060 | 3,373 | 6,121 | 9,494 | 291,453 |
| February | 2,675,265 | 3,272 | 6,844 | 10,113 | 264,538 |
| March | 3,027,280 | 3,164 | 6,687 | 9,851 | 307,306 |
| April | 2,832,406 | 3,949 | 8,447 | 12,396 | 228,493 |

## ORDERS AND INQUIRIES FOR NEW EQUIPMENT PLACED SINCE THE CLOSING OF THE JULY ISSUE

### DIESEL-ELECTRIC LOCOMOTIVE ORDERS

| *Road and builder* | *No. of units* | *Horsepower* | *Service* | *Other detail* |
|---|---|---|---|---|
| CHICAGO, BURLINGTON & QUINCY: | | | | |
| Electro-Motive | 30 | 1,750 | Road switch | SD-9's. For delivery August-September-October. |
| ST.-LOUIS-SOUTHWESTERN: | | | | |
| Electro-Motive | 6 | 1,750 | General purpose | Cost, $1,140,000. For October delivery. |

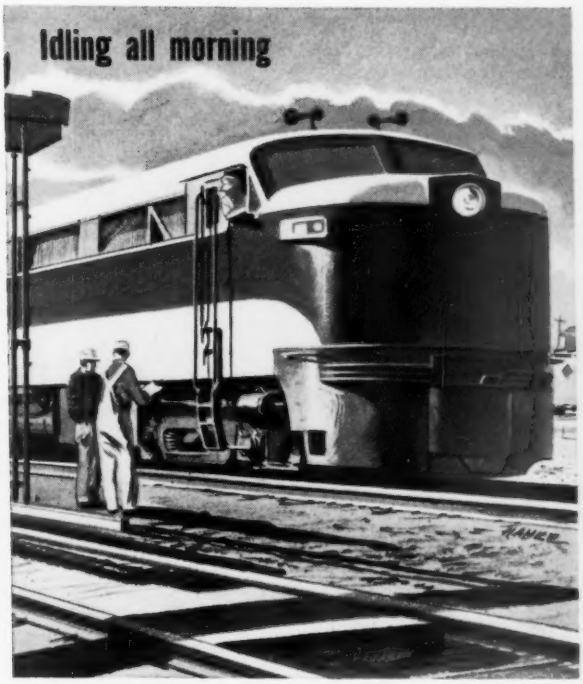
### FREIGHT-CAR ORDERS

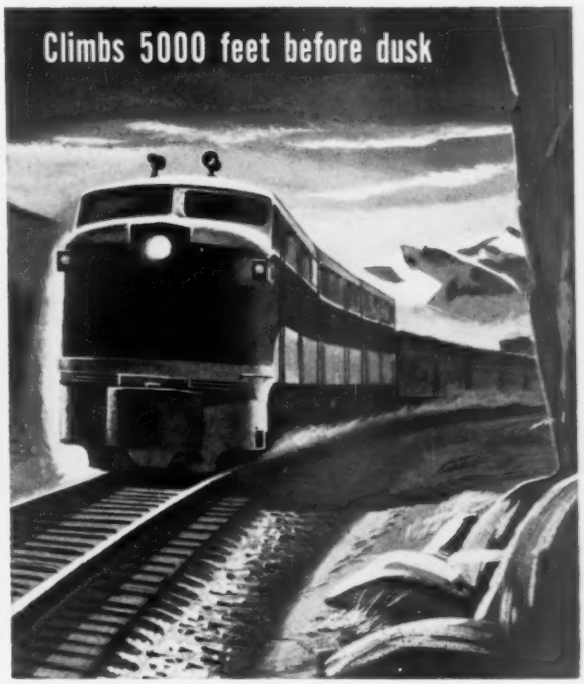
| *Road and builder* | *No. of Cars* | *Type of car* | *Cap., tons* | *Other detail* |
|---|---|---|---|---|
| BALTIMORE & OHIO: | | | | |
| Company shops | 225 | Gondola | 70 | Completion expected this month. |
| GREAT NORTHERN: | | | | |
| Company shops | 1,000 | Box | 50 | Cost, $8,800,000. For completion by September 1958. |
| | 50 | Flat | 50 | Cost, $600,000. For completion by May 30, 1958. |
| KAISER ALUMINUM & CHEMICAL CORPORATION: | | | | |
| Pullman-Standard | 24 | Gondola | — | With all-welded aluminum bodies, supplementing present fleet of 35 such cars hauling bauxite in Jamaica, BWI. Deliverys to begin in October. |
| PITTSBURGH & LAKE ERIE: | | | | |
| Despatch Shops | 2,000 | Hopper | — | Unit cost, $8,300. |
| Greenville Steel Car | 500 | Mill type gondola | — | Unit cost, $10,500. |
| SACRAMENTO NORTHERN: | | | | |
| ACF Industries | 20 | Drop bottom gondola | 70 | For delivery first quarter 1958. |

### PASSENGER-CAR ORDERS

| *Road and builder* | *No. of Cars* | *Type of car* | *Other detail* |
|---|---|---|---|
| CANADIAN PACIFIC: | | | |
| Budd Co. | 1 | RDC-1 | Delivered. |
| UNION PACIFIC-WABASH: | | | |
| Pullman Standard | 6 | Astradome coaches | Five for UP; 1 for Wabash for "City of St. Louis." Delivery to start second quarter 1958. |

# *This job isn't as tough as it looks...*




**NATIONAL BRUSHES** *assure*

*balanced performance* ***under all operating conditions!***

Long brush life, excellent commutator condition — "National" brushes assure both on all types of equipment, in all classes of service. Reason for such remarkably *balanced performance:* NATIONAL CARBON'S long-term brush development *specifically for railroads.*

Millions of test-miles prove out each "National" brush grade. And there's a fully tested brush for every diesel-electric traction motor and generator requirement. Ask your "National" brush man to show you why his brushes outsell all others combined.

**BALANCED PERFORMANCE ASSURES:**

***LONG BRUSH LIFE*** — stands up under constant shock and long, hard runs.

***EXCELLENT COMMUTATOR CONDITION*** — superior film-forming qualities preserve commutators and assure smooth, quiet running.

**NATIONAL BRUSHES**
TRADE MARK

**Best for all types of equipment . . . preferred for all types of service**

UNION CARBIDE

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# COORDINATED MECHANICAL ASSOCIATIONS MEETINGS

## September 16, 17 and 18, 1957

(The programs for the Coordinated Mechanical Associations as they appear below are in brief. More detailed programs will appear in the September issue, also a list of the Allied Railway Supply Association exhibitors.)

## MONDAY, SEPTEMBER 16

### Air Brake

Address: Pres. R. J. Dewsbury.

Address: Wm. M. Keller.

Composition Brake Shoes—Montreal Air Brake Club.

Pressure Maintaining.

Satisfactory Safety Valves.

Joint meeting with RF&OOA—24-RL Brake Equipment.

### Car Department Officers

Address: Pres. H. M. Nelson.

Report: Construction, Maintenance and Upgrading Freight-Car Equipment.

Address: Speaker to be named.

Report: AAR Loading Rules.

Report: Interchange and Billing for Car Repairs.

Report: Wheel Shop Practices.

### Locomotive Maintenance Officers

Special address: R. M. MacDonald, director of operations, Board of Transport Commissioners for Canada. Subject: A Cooperative Approach to Safety.

Report: Diesel Mechanical—other than engine.

Report: General diesel maintenance subjects.

Report: Diesel Electrical.

### Railway Fuel and Operating Officers

Address: Pres. T. J. Conway.

Address: Speaker to be named.

Operating Responsibility to Avoid Delay to Traffic.

Safety.

Abuse of the Diesel Locomotive.

Joint meeting with ABA—24-RL Brake Equipment.

## TUESDAY, SEPTEMBER 17

Basic Characteristics of Air Brake Equipment Affecting Train Operation—St. Louis Air Brake Club.

Address: J. A. Welsch, general superintendent motive power, IC. Subject: Changes I Have Noticed in Air Brakes.

Planning Through Research—C. F. Hammer, Westinghouse Air Brake Co.

Some Facts on Charging Times.

Report: Light Repair Tracks and Train Yard Operation.

Address: Speaker to be named.

Report: Car Lubrication.

Comments by Wm. M. Keller.

Special address: H. R. Longhurst, assistant director, Bureau of Safety and Service, ICC. Subject: Railroad Safety.

Report: Shop Equipment. Topic: Machinery and Equipment for Cleaning, Testing and Overhauling Diesel Locomotive Components.

Dual Fuel Control.

Public Relations.

Panel discussion—Proper Method of Teaching Train Rules to Operating Personnel.

Impending Legislation Affecting the Railroads.

## WEDNESDAY, SEPTEMBER 18

Elections.

Testing of Diesel-Electric Locomotive Air Brake Equipment—Pittsburgh Air Brake Club.

Question Box.

Committee reports.

Report: Air Conditioning Equipment—Operation and Maintenance.

Report: Maintenance of Passenger-Car Equipment.

Report: Painting—Modern Methods in Finishing Railroad Equipment.

Report: Maintenance and Servicing of Mechanically Equipped Refrigerator Cars.

Miscellaneous reports.

Election of officers.

Report: Diesel Engine Maintenance. Topic: Chrome Plated Liners and Crankshafts and Lube Oil Cooling and Filtering Systems.

Report: Diesel Material Reconditioning and Control. Topic: Determination of Diesel Locomotive Material Items Economical to Reclaim.

Report—Boiler Makers' Section. Topic: Economical Methods of Cleaning Steam Generators and Appurtenances.

Report: Diesel Fuel and Lube Oil. Topic: Economy Fuel—Its Effect on Diesel Locomotive Maintenance.

Panel discussion—Diesel Troubles; Cause and Remedies.

Utilization of Power.

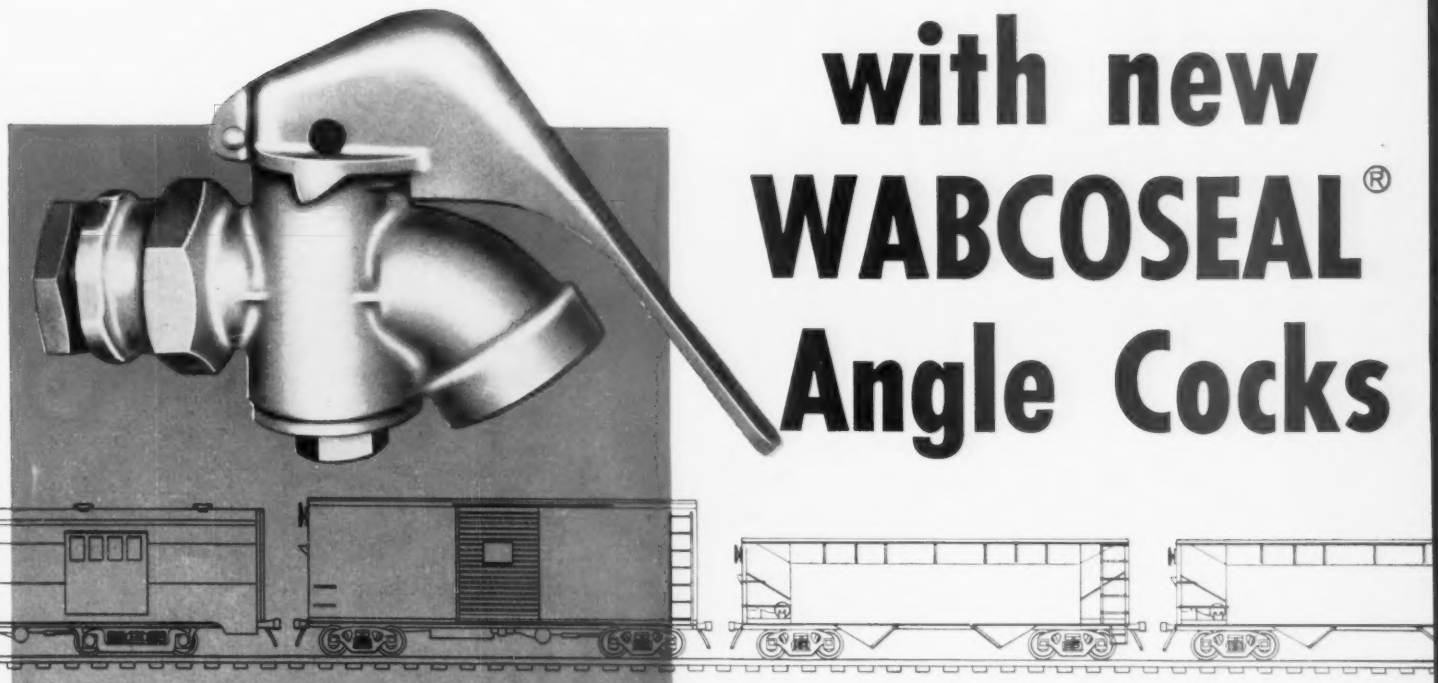
Improved Methods of Educating Engine Crews.

Effect of Motive-Power Modernization Upon Duties of Road Foremen.

Treating of Rails Chemically to Avoid Slipping. Use of Sand, etc.

Economical Fuel Handling.

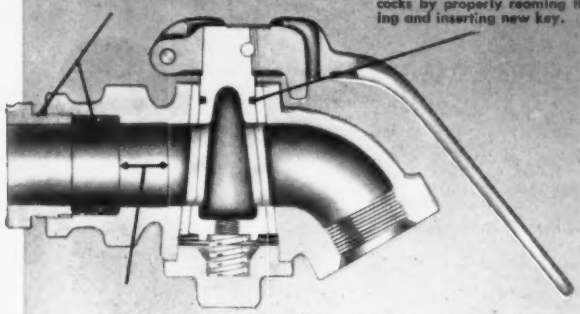
# Stop those air leaks with new WABCOSEAL® Angle Cocks



**FOR FREIGHT CARS:**

Wabco compression ring grips pipe when nut is tightened to provide tight seal and strong clamping action.

"O" ring seals the key effectively through a wide degree of key wear. This seal can be used on old angle cocks by properly reaming the bushing and inserting new key.



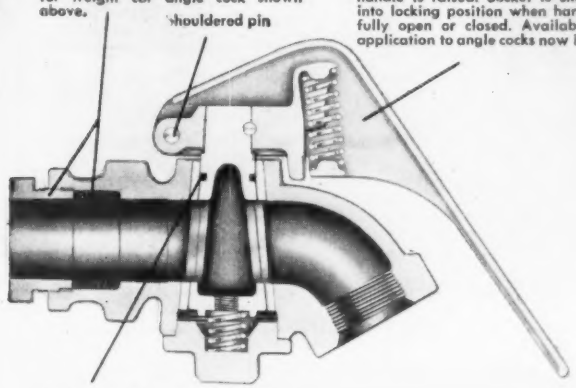
Brake pipe nipple length can fall anywhere within this range and still be perfectly sealed. Threaded nipple is not necessary but can be used if more convenient.

**FOR PASSENGER CARS AND LOCOMOTIVES:**

New Wabcoseal fitting is same as for freight car angle cock shown above.

Shouldered pin

Strong spring is compressed when handle is raised. Socket is snapped into locking position when handle is fully open or closed. Available for application to angle cocks now in use.



Sealed key is identical to freight car angle cock key shown above.

DON'T tolerate a high air leakage rate on your trains. Use the new Wabcoseal Angle Cocks for tighter seals.

The sealed key is new, with an "O" ring seal that stays tight through a wide range of key wear.

The brake pipe connection is new. A rugged Wabco compression ring replaces the old tapped thread. Tolerance for length of pipe nipple is now provided.

The spring-locking handle is new for passenger cars and locomotives. When the handle is removed to fully open or closed position a strong spring snaps the socket into locked position and keeps it there. A shouldered pin provides proper freedom of handle movement.

The sealed key and spring-locking handle are available for application to present angle cocks. See your Westinghouse Air Brake representative for more information.

Westinghouse Air Brake
COMPANY

AIR BRAKE DIVISION WILMERDING, PA.

# Personal Mention . . . .

**Atchinson, Topeka & Santa Fe.**—CHARLES MONTGOMERY, JR. general passenger car inspector at Chicago, appointed color and design engineer.

**Baltimore & Ohio.**—J. A. F. CRAIG appointed master mechanic at Punxsutawney, Pa., formerly master mechanic, B&O Chicago Terminal, Chicago. *John L. North*, supervisor of personnel training, appointed regional master car builder, succeeding H. W. Chew, retired. Headquarters, Baltimore.

**Baltimore & Ohio Terminal.**—C. J. HOWDYSHELL, general foreman, Chicago, appointed master mechanic.

**Bessemer & Lake Erie.**—ROY C. BEAVER, vice-president and general manager, retired. Formerly superintendent of motive power from 1945 until 1953.

**Canadian National.**—GEORGE M. DUFFY, locomotive tester, Moncton, N. B., shops, appointed air-brake and mechanical instructor, Atlantic Region.

**Canadian Pacific.**—*L. B. George*, assistant chief of motive power and rolling stock, system, Montreal, appointed chief of motive power and rolling stock, succeeding *F. A. Benger*, retired. *W. D. Dickie*, works manager, Angus shops, Montreal, succeeds Mr. George. *C. W. Parker*, special engineer, motive power department, appointed chief mechanical engineer. *H. W. Hayward*, engineer of standards and methods, office of motive power and rolling stock, succeeds Mr. Dickie.

**Central of Georgia.**—*C. H. Carroll*, general diesel supervisor, appointed supervisor diesel locomotive maintenance at Macon, Ga. *W. H. Leavengood*, mechanical engineer, appointed assistant master mechanic-system, with headquarters at Macon. *W. B. Grimes*, electrical engineer, appointed equipment engineer at Savannah, Ga.

**Chesapeake & Ohio.**—J. J. LOCKWOOD appointed train master and road foreman of engines, Huntington, W. Va., succeeding H. E. BUSS, retired.

**Chicago & North Western.**—H. K. COX appointed master mechanic, Twin Cities Division. Headquarters, St. Paul, Minn.

**Great Northern.**—DONALD F. MARSTON appointed mechanical assistant at St. Paul. JOSEPH F. N. GAYNOR appointed assistant master mechanic at Wenatchee, Wash.

**New York Central.**—PAUL N. BOWER, appointed general foreman at East Rochester, N. Y., car shops. R. L. WOLMPSNER, shop draftsman, appointed equipment engineer at Beech Grove, Ind., car shop. GORDON M. BROWN, draftsman, appointed assistant equipment engineer at East Rochester car shops. W. R. SCHUELTZ, assistant apprentice instructor, appointed apprentice instructor at Collinwood, Ohio, diesel locomotive shop.

**Pennsylvania.**—W. F. COUNTY and J. B. FULTON appointed assistant foreman, Paoli, Pa. J. W. IRWIN appointed motive-power inspector, Harrisburg, Pa. E. L. PRICE appointed assistant foreman, Enola enginehouse, Enola, Pa. J. F. ROSEMAN appointed assistant foreman, Juniata shop, Altoona, Pa. N. F. THOMPSON appointed assistant foreman, Harrisburg diesel shop, Harrisburg, Pa. D. W. GRIMM, assistant foreman, methods and cost control, Juniata heavy repair shops, appointed assistant master mechanic, East Altoona, Pa. E. T. HARLEY appointed foreman of motive power, Louisville, Ky., and Jeffersonville, Ind. W. J. ADAMS appointed foreman, enginehouse, Terre Haute, Ind.

**Quebec North Shore & Labrador.**—*J. J. Miller* appointed chief mechanical officer at Sept-Iles, Que., succeeding *J. H. Miller*, resigned. J. J. Miller formerly regional supervisor of diesel equipment, Atlantic Region, Canadian National.

**Richmond, Fredericksburg & Potomac.**—HARTWELL T. RAINEY, JR., superin-

(*Continued on page 79*)

## SELECTED MOTIVE POWER AND CAR PERFORMANCE STATISTICS

FREIGHT SERVICE (DATA FROM I.C.C. M-211 AND M-240)

| Item No. | | Month of April | | 4 months ended with April | |
|---|---|---|---|---|---|
| | | 1957 | 1956 | 1957 | 1956 |
| 3 | Road locomotive miles (000) (M-211): | | | | |
| 3—05 | Total, steam | 2,148 | 3,751 | 9,274 | 16,660 |
| 3—06 | Total, Diesel-electric | 36,556 | 36,870 | 145,821 | 147,912 |
| 3—07 | Total, electric | 685 | 733 | 2,823 | 2,897 |
| 3—04 | Total, locomotive-miles | 39,622 | 41,587 | 158,892 | 168,367 |
| 4 | Car-miles (000,000) (M-211): | | | | |
| 4—03 | Loaded, total | 1,584 | 1,677 | 6,381 | 6,715 |
| 4—06 | Empty, total | 974 | 922 | 3,763 | 3,700 |
| 6 | Gross ton-miles-cars, contents and cabooses (000,000) (M-211): | | | | |
| 6—01 | Total in coal-burning steam locomotive trains | 6,543 | 9,832 | 26,150 | 41,156 |
| 6—02 | Total in oil-burning steam locomotive trains | 114 | 645 | 698 | 3,974 |
| 6—03 | Total in Diesel-electric locomotive trains | 107,417 | 106,939 | 425,907 | 422,873 |
| 6—04 | Total in electric locomotive trains | 2,139 | 2,292 | 8,682 | 8,756 |
| 6—06 | Total in all trains | 117,087 | 120,588 | 464,989 | 479,964 |
| 10 | Averages per train-mile (excluding light trains) (M-211): | | | | |
| 10—01 | Locomotive-miles (principal and helper) | 1.02 | 1.03 | 1.02 | 1.03 |
| 10—02 | Loaded freight car-miles | 42.7 | 43.3 | 42.8 | 42.8 |
| 10—03 | Empty freight car-miles | 26.2 | 23.8 | 25.3 | 23.6 |
| 10—04 | Total freight car-miles (excluding caboose) | 68.9 | 67.1 | 68.1 | 66.4 |
| 10—05 | Gross ton-miles (excluding locomotive and tender) | 3,152 | 3,112 | 3,123 | 3,062 |
| 10—06 | Net ton-miles | 1,426 | 1,430 | 1,417 | 1,401 |
| 12 | Net ton-miles per loaded car-mile (M-211) | 33.4 | 33.0 | 33.1 | 32.7 |
| 13 | Car-mile ratios (M-211): | | | | |
| 13—03 | Per cent loaded of total freight car-miles | 61.9 | 64.5 | 62.9 | 64.3 |
| 14 | Averages per train hours (M-211): | | | | |
| 14—01 | Train miles | 19.0 | 18.8 | 18.9 | 18.7 |
| 14—02 | Gross ton-miles (excluding locomotive and tender) | 59,239 | 57,731 | 58,489 | 56,706 |
| 17 | Car-miles per freight car day (M-240): | | | | |
| 17—01 | Serviceable | 46.3 | 47.1 | 45.8 | 46.8 |
| 17—02 | All | 44.5 | 45.3 | 44.1 | 45.0 |
| 18 | Average net ton-miles per freight car-day (M-240) | 921 | 966 | 916 | 948 |
| 20 | Per cent of home cars of total freight cars on the line (M-240) | 45.2 | 41.4 | 43.9 | 41.7 |

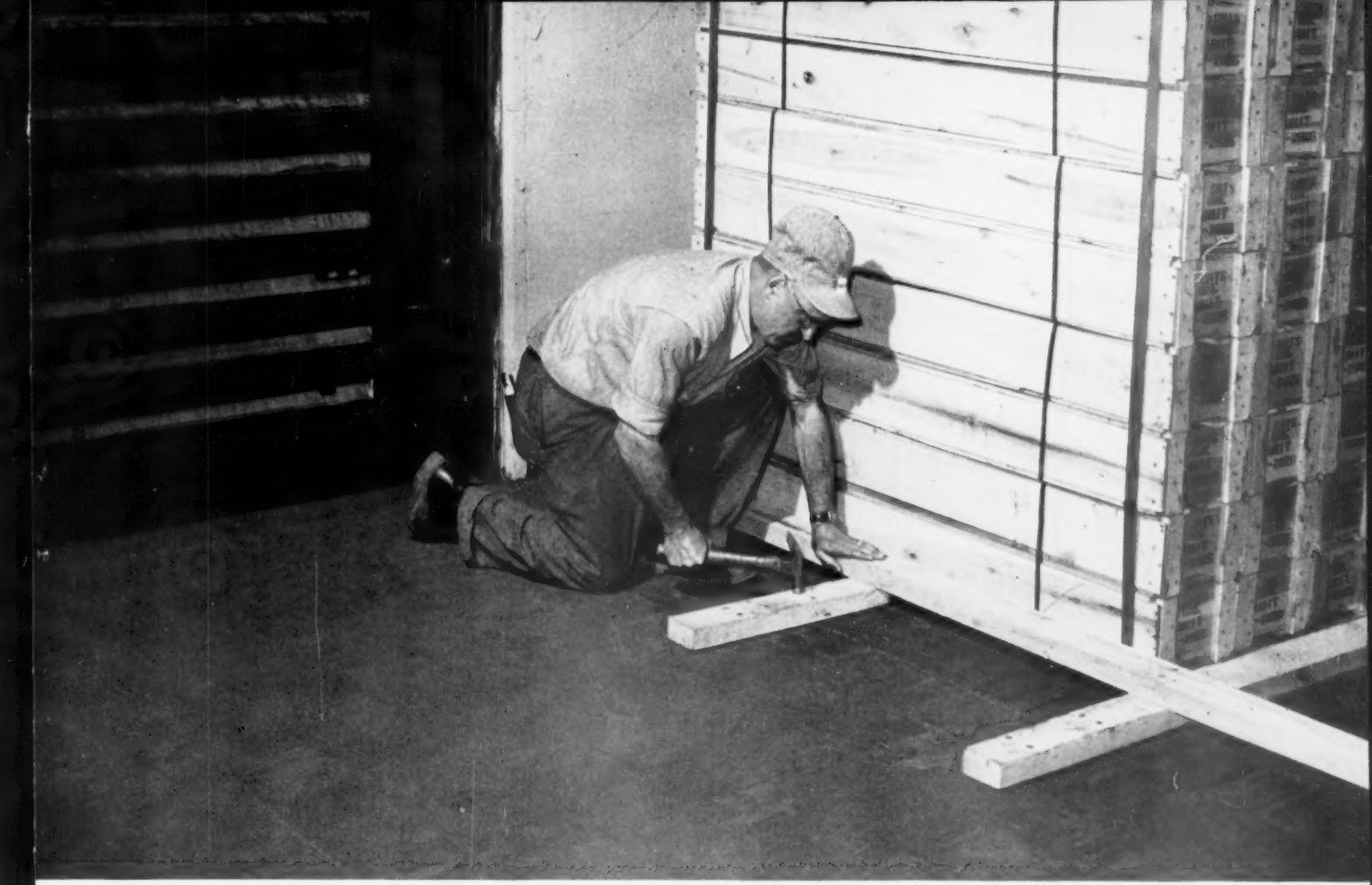
PASSENGER SERVICE (DATA FROM I.C.C. M-213)

| | | | | | |
|---|---|---|---|---|---|
| 3 | Road motive-power miles (000): | | | | |
| 3—05 | Steam | 277 | 741 | 1,302 | 3,361 |
| 3—06 | Diesel-electric | 19,291 | 20,113 | 77,436 | 81,057 |
| 3—07 | Electric | 1,194 | 1,286 | 4,787 | 5,165 |
| 3—04 | Total | 20,762 | 22,140 | 83,525 | 89,583 |
| 4 | Passenger-train car-miles (000): | | | | |
| 4—08 | Total in all locomotive-propelled trains | 212,160 | 227,253 | 851,681 | 918,331 |
| 4—09 | Total in coal-burning steam locomotive trains | 2,097 | 4,666 | 9,810 | 20,308 |
| 4—10 | Total in oil-burning steam locomotive trains | 19 | 991 | 259 | 7,002 |
| 4—11 | Total in Diesel-electric locomotive trains | 195,445 | 206,151 | 783,459 | 829,381 |
| 12 | Total car-miles per train-mile | 9.71 | 9.84 | 9.70 | 9.83 |

YARD SERVICE (DATA FROM I.C.C. M-215)

| | | | | | |
|---|---|---|---|---|---|
| 1 | Freight yard switching locomotive-hours: | | | | |
| 1—01 | Steam, coal-burning | 156,068 | 243,603 | 655,420 | 997,528 |
| 1—02 | Steam, oil-burning | 3,882 | 29,347 | 22,627 | 110,980 |
| 1—03 | Diesel-electric[1] | 3,777,539 | 3,781,916 | 15,143,458 | 15,375,781 |
| 1—06 | Total | 3,940,220 | 4,058,395 | 15,833,045 | 16,497,119 |
| 2 | Passenger yard switching hours | | | | |
| 2—01 | Steam, coal-burning | 3,895 | 5,430 | 16,706 | 26,573 |
| 2—02 | Steam, oil-burning | 78 | 3,130 | 997 | 11,861 |
| 2—03 | Diesel-electric[1] | 238,770 | 245,242 | 971,788 | 989,694 |
| 2—06 | Total | 266,956 | 278,813 | 1,086,907 | 1,131,275 |
| 3 | Hours per yard locomotive-day: | | | | |
| 3—01 | Steam | 5.5 | 6.0 | 5.7 | 6.0 |
| 3—02 | Diesel-electric | 15.4 | 16.0 | 15.5 | 16.0 |
| 3—05 | Serviceable | 15.6 | 15.8 | 15.7 | 16.0 |
| 3—06 | All locomotives (serviceable, unserviceable and stored) | 14.4 | 14.4 | 14.5 | 14.4 |
| 4 | Yard and train-switching locomotive-miles per 100 loaded freight car-miles | 1.72 | 1.67 | 1.71 | 1.70 |
| 5 | Yard and train-switching locomotive-miles per 100 passenger train car-miles (with locomotives) | .77 | .76 | .79 | .76 |

[1]Excludes B and trailing A units



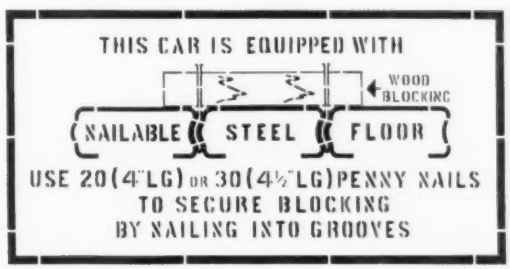
# N-S-F® helps RAILROADS BUILD "PREVENTION PACKAGES" THE RIGHT WAY... FROM THE FLOOR UP!

***"Prevention Package" . . . a freight car built with special features and maintained with special care to help put the brakes on the railroads' skyrocketing Cause F (defective or unfit equipment) loss and damage claims, now edging the $5 million annual mark.***

The logical place to begin construction of a "Prevention Package" is right down on the floor, with NAILABLE STEEL FLOORING. Here's why:

- N-S-F will give the car greater structural strength from the underframe up.
- N-S-F substantially reduces floor damage and repairs by standing up to the concentrated loads of lift-truck operations.
- N-S-F takes repeated nailing of blocked loads without deterioration or leaking. Nails are driven *into* nailing grooves, not *through* the floor.

Full information about N-S-F and why it is the backbone of the "Prevention Package" is readily available from Stran-Steel representatives in Chicago, New York, Philadelphia, St. Louis, Cleveland, San Francisco, Minneapolis and Atlanta. In Canada, N-S-F is made and sold by International Equipment Co., Montreal.




The stencil that smart shippers look for in freight cars. It means better lading protection, and it can help reduce railroads' Cause F loss and damage claims.

N-S-F *is a registered trademark of Stran-Steel Corp.*

**N-S-F®: NAILABLE STEEL FLOORING**

Originated and sold by—

**STRAN-STEEL CORPORATION**

Dept. L-44 • Detroit 29, Michigan • Division of

**NATIONAL STEEL CORPORATION**

# Check list for a customer: to measure the value of supplier delivery

Do you remember the Summer of 1956?

We do too!

Last summer we handled steel so hot it actually scorched timbers in the car. It came into our plant as red hot steel and left as Steel Ends . . . delivered on time. On one occasion, we received steel and shipped finished Ends, made from that *same* steel, in the *same railroad car* . . . delivered on time.

The Summer of 1956 is a good index to the value of a supplier's responsibility of "delivery". A responsibility that includes the same attention to parts and small orders as that given to large orders. A responsibility for on-time delivery at all times.

How important is delivery?

Your experience tells you a supplier has no greater responsibility.

**STANDARD** RAILWAY EQUIPMENT MANUFACTURING COMPANY

General Office: 4527 Columbia Ave., Hammond, Ind. • New York • Chicago • St. Paul • San Francisco

Standard Railway Equipment Manufacturing Company, (Canada) Ltd. Sun Life Building, Montreal

# progressive mechanical men are saying:

# "remember september"

...password to the most important meeting of the year

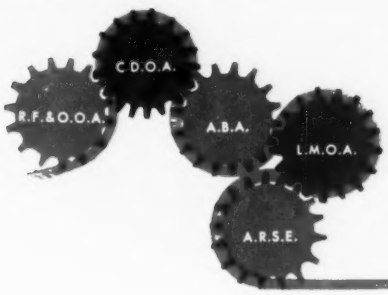
*CHICAGO*

HOTEL SHERMAN

SEPT. 15·16·17·18·19

THIS YEAR... *more new* developments and technical advances *than ever* before! Be sure to attend the "idea clinic".

*All* the newest information, *all* in one place, *all* at one time! *ALL* FIVE MEET AT THE SHERMAN! 4 Mechanical Department Conventions, 1 Allied Railway Supply Exhibit.




**AIR BRAKE ASSOCIATION**
**CAR DEPARTMENT OFFICERS' ASSOCIATION**
**LOCOMOTIVE MAINTENANCE OFFICERS' ASSOCIATION**

*RAILROADS ARE MOVING FORWARD— STAY WITH THEM!*

**RAILWAY FUEL & OPERATING OFFICERS' ASSOCIATION**
**THE ALLIED RAILWAY SUPPLY EXHIBIT**

Sperry

*Question and Answer Session on Carbon Brushes*

# *that says a lot...about* QUALITY

*Sperry Rail Service, Danbury, Connecticut, designers and operators of Sperry Detector Cars, inspect thousands of miles of rail in track for the nation's foremost railroads. Sperry cars have used Speer Carbon Brushes in their rail current generators since 1935.*

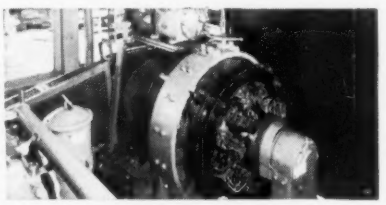
*Knowing that there must be some good reasons for long use, we asked the Sperry people to tell us why. Here is their answer:*

"In our operations it is important that every Detector Car have a dependable source of high-amperage, low-voltage current for testing purposes under a wide range of temperature and atmospheric conditions. Our cars have had to test in temperatures from 40 to 50 below zero to over 100 F. In the hot climates the generating compartments on our cars reach temperatures of approximately 130 F. The Speer #688 Brushes with their long life, excellent electrical characteristics and good cleaning action have given us the highest performance at lowest cost possible. We have tried other makes but have been unable to find brushes which compare with the ones we are using.

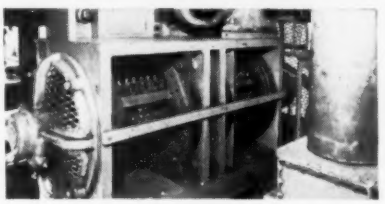
"In every Detector Car we use Speer #688 Brushes on both Rail Current Generators. One of these is a Chandeysson H8-43 Homopolar Generator from which we take 9,000 amps. at voltages from approximately 1.5v to 2.2v. This generator uses 192 brushes. The other is a Chandeysson BP17 Double Commutator Generator from which we take from 1,500 to 2,000 amps. from each side – double these figures for total output, also at voltages of from about 1.0v to 2.0v. Eighty brushes are used per unit. On this generator the commutator mica is not undercut but left flush with the commutator surface. This requires a hard brush with good cleaning action such as the Speer 688.

"The Speer Carbon Company representative has maintained close personal contact with us since we started using Speer brushes. To our way of thinking he is the most competent authority on electrical commutation we know."

This is but one railroad customer reaction to one type of Speer carbon brush for railroad use. Speer brushes can do as much for you and there is a type for every kind of railroad application.



Chandeysson BP17-4000 amperes, 2-volt generator uses 64 #688 Speer Brushes



2 Chandeysson H8-43 Homopolar Generators produce 4500 amperes, 2 volts per unit. Each uses 96 #688 Speer Brushes.

*Available for the asking is the book, "Brushes by Speer," which describes the complete line of Speer Brushes.*

SPEER Carbon Co.
St. Marys, Pa.

# DAVIS

A.A.R. Approved
No. 18
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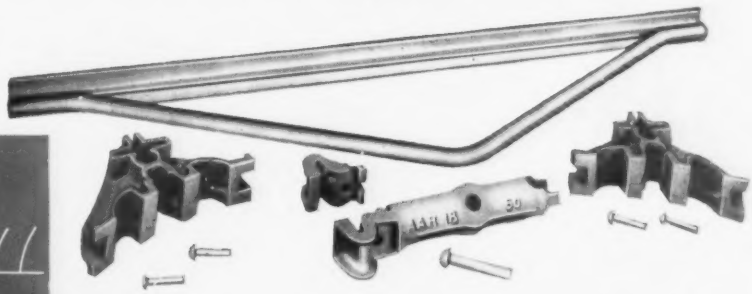
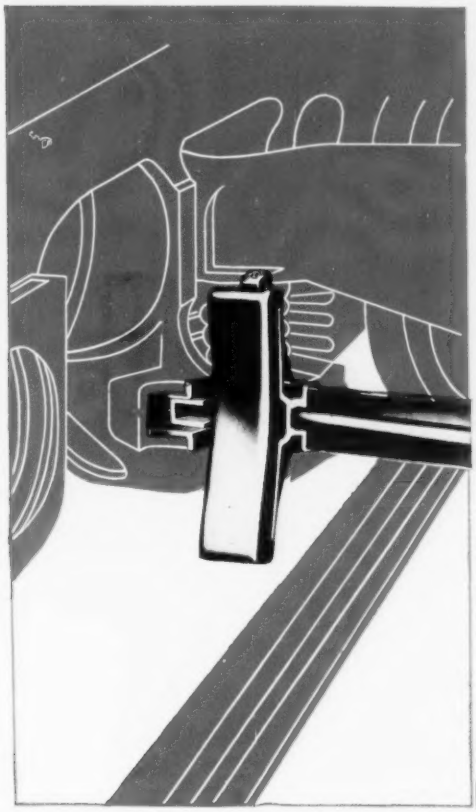
# SOLID TRUSS BRAKE BEAMS

**A RECOGNIZED STANDARD FOR MORE THAN 30 YEARS**

Whether for Conventional Hanging or for UNIT TRUCKS Davis Solid Truss Brake Beams are DECISIVELY SUPERIOR.





**ANY PART RENEWABLE**

***Without Disturbing the Truss!***

**OTHER IMPORTANT FEATURES:**

- One piece FORGED truss
- No Threaded Rods
- Interchangeable Right and Left Brake Heads Are Easily Applied without Dismantling Truss

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# GASCON®...

## choice of more than 100 U.S. Railroads!

The widespread popularity of Sinclair GASCON® Diesel Engine Lubricating Oils is due to their brilliant performance.

With their high degree of detergency, GASCON Oils keep all parts of a Diesel engine operating clean and free.

It's time you, too, investigated the advantages of this top-quality railroad lubricant. Contact your Sinclair Representative, or write us today.

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SANTA FE

*At Pittsburgh & West Virginia Railway*

# 4 years between overhaul

*. . . cast iron cylinder liner wear* only .0045" and .003" per 100,000 miles, when protected with* ***AIR-MAZE*** *oil bath filter*

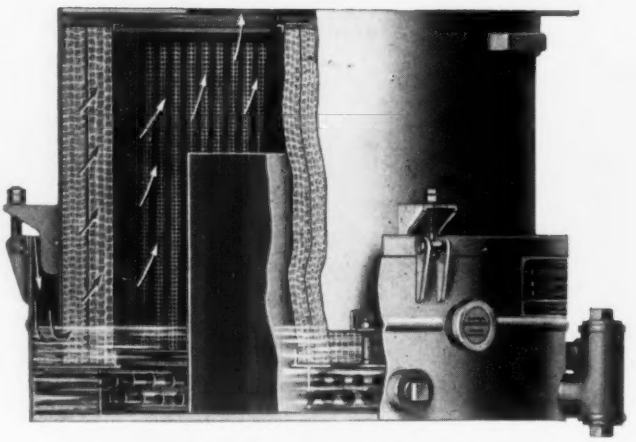
Once it was necessary to overhaul diesels every 18 to 24 months. Now with the Air-Maze oil bath filter, the original oil bath equipped 2000 hp Fairbanks Morse heavy duty unit on this railroad has gone 48 months . . . 182,000 miles . . . between overhaul. But that's not all. After 4 years, the original cylinder liners were re-installed without reconditioning.

Prior to the oil bath filter, the engine air receivers were wiped every 30 days. Now, less foreign contaminant is found in the manifold in 90 days of service.

With conventional filters, 6 panels must be removed for cleaning and re-oiling every two weeks. The oil bath filter simply requires checking oil level every 30 days, draining and cleaning the bowl every 90 days.

With the Air-Maze oil bath filter, intake air is thoroughly cleaned in a bath of oil. As a result, its inherently higher filtering efficiency is maintained even at lowest engine speeds.

Contact your engine builder or write us for information. Air-Maze Corporation, Cleveland 28, Ohio. Dept. RL-10.



*Air-Maze oil bath filter for cleaning intake air to cut engine wear.*

**As this is an opposed-piston type engine, liner measurements were taken at points of maximum wear . . . namely, 19-5/8" from top of liner and 19-9/16" from bottom of liner.*

*the biggest names in diesels are protected by Air-Maze filters*

**AIR-MAZE**

***The Filter Engineers***

ENGINE AIR FILTERS • CAR BODY FILTERS • LUBE OIL FILTERS • PASSENGER CAR FILTERS

# Modern Freight Service..

**DEMANDS SUPERIOR RIDING QUALITIES AND LONG SERVICE LIFE**

More than 100 MILLION car miles of service plus the favorable A.A.R. High Speed Truck Test results show that your cars will meet these requirements when equipped with

**BUCKEYE C-R Trucks**

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*Refer Adv. No. 11881*
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The Buckeye Steel Castings Co.

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**for a surge of power**

**. . . or steady flow**

*You can depend on* **gould** *batteries*

America's Finest!
GOULD
KATHANODE BATTERIES
for Diesel Starting

Maximum power and long, trouble-free battery life, under *all* operating conditions, are yours with every Gould Battery you buy. And, to insure that you fully realize these benefits, Gould employs a staff of full-time application engineers. These men help you set-up your battery maintenance shop, help you establish sound preventive maintenance procedures, make routine calls to check on conditions, and instruct your new personnel in correct procedures. Do you see how you can increase battery life with this service? Why not talk it over with your local Gould representative. He's listed in the yellow pages under "Batteries." Gould-National Batteries, Inc., Trenton 7, N. J.

*More Power to you from Gould*

Always Use Gould-National Automobile and Truck Batteries

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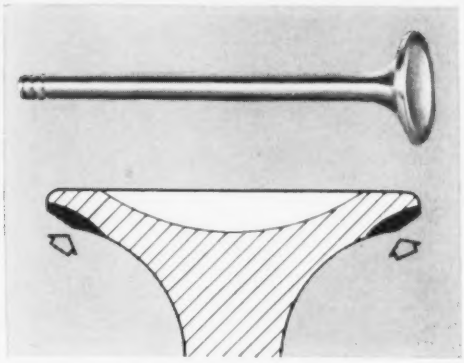
*Electro-Motive Parts Progress*

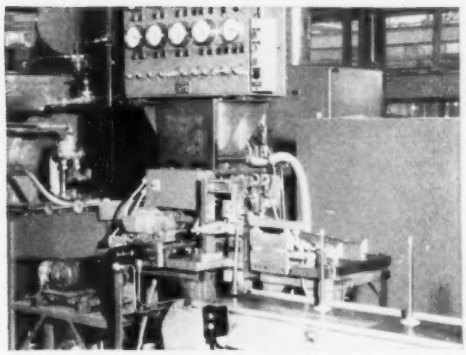
# THIS EXHAUST VALVE AVERAGES TWO YEARS SERVICE BEFORE REGRIND



## *Reasons:*

### 1 *Engine's choice*

Experience has taught us that an engine dictates its own valve needs. Our Model 567 Diesel proved this when previous valve designs of other engines were tried. Exhaustive testing produced the valve shown here, which in normal passenger or freight service runs two years before seat and face regrind. Cutaway view shows special hard Stellite face on valves dictated by our higher horsepower 567C Diesel.



### 2 *Exclusive manufacture and inspection process*

Manufactured almost entirely by automatic machines, Electro-Motive valves are held to extremely close tolerances. Guarding this precision is a battery of automatic and visual "in-process" inspection controls that assure constant quality and absolute machining accuracy. An example is this electronic machine which checks 14 tolerances at one time on every valve.

### 3 *Protective packaging*

This special package is used to protect the finely machined surfaces of the valve during handling. Each valve is fitted snugly and protected against moisture with rust preventative V.P.I. paper. Packing like this keeps the valves in perfect condition, always ready for immediate use, and far easier to handle and store.

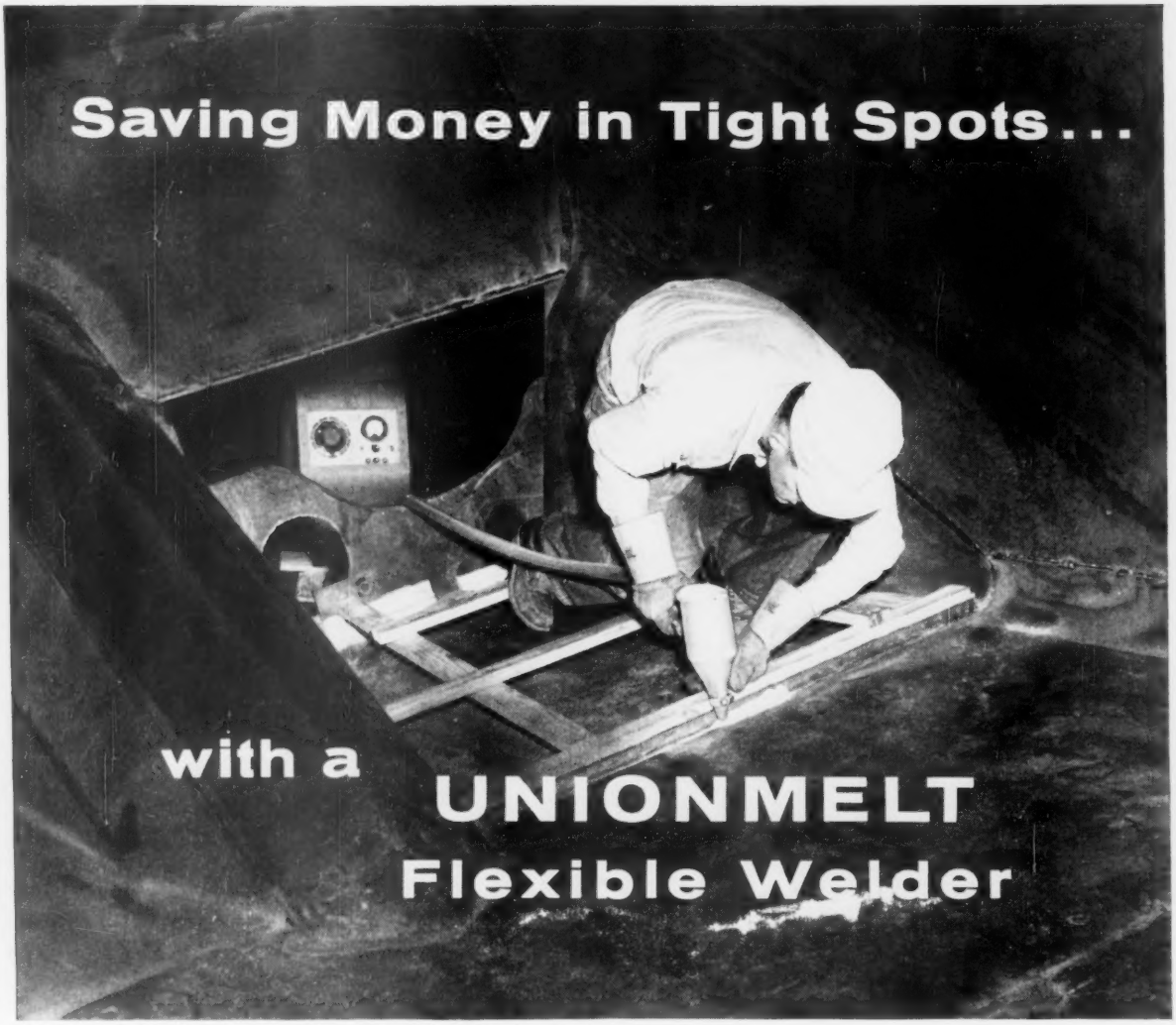
Continuing improvement is an unending program at Electro-Motive to bring you products of highest quality at lowest cost. When you buy General Motors Diesel parts you get components that are designed, engineered and built to work together. In addition, you benefit with a full warranty and convenient, fast delivery from nine strategically located Electro-Motive warehouses.

GENERAL MOTORS LOCOMOTIVES

**ELECTRO-MOTIVE DIVISION · GENERAL MOTORS**

LA GRANGE, ILLINOIS • *HOME OF THE DIESEL LOCOMOTIVE*

In Canada: General Motors Diesel, Ltd., London, Ontario




A UNIONMELT flexible welder simplifies and speeds fabrication of a hopper car.

Wherever flexibility and maneuverability are required in welding, the UNIONMELT flexible welder far outperforms rigid, mechanical installations . . . Welding in corners and in tight spots is no problem with this sturdy portable unit, and top quality welds are produced at speeds up to 10 inches per minute in many operations. The combination hopper and welding head is lightweight, and requires no special skill to operate.

### Combines Advantages

This UNIONMELT flexible welder combines the speed of mechanized installations with the operational freedom of manual welding. Wire feed unit and controls are mounted on a mobile carriage which can be moved quickly from one job to another, or from point to point on the same job. Initial investment for flexible welding equipment is considerably less than for stationary automatic welding installations—operations are economical, and maintenance costs are low.

For more information on this and other modern methods for car fabrication, call your local LINDE representative, or write to-day for free illustrated literature.

RAILROAD DEPARTMENT

**LINDE COMPANY**

DIVISION OF UNION CARBIDE CORPORATION

30 East 42nd Street, New York 17, New York

In Canada: LINDE COMPANY, Division of Union Carbide Canada Limited, Toronto

"Linde," "Oxweld," "Union Carbide," and "Unionmelt" are registered trade-marks of Union Carbide Corporation.

The familiar symbol of over forty years' service to the railroad industry.

# "Safety" POWER and CONTROL SYSTEMS

## ...Unequalled Performance...Low Cost Maintenance

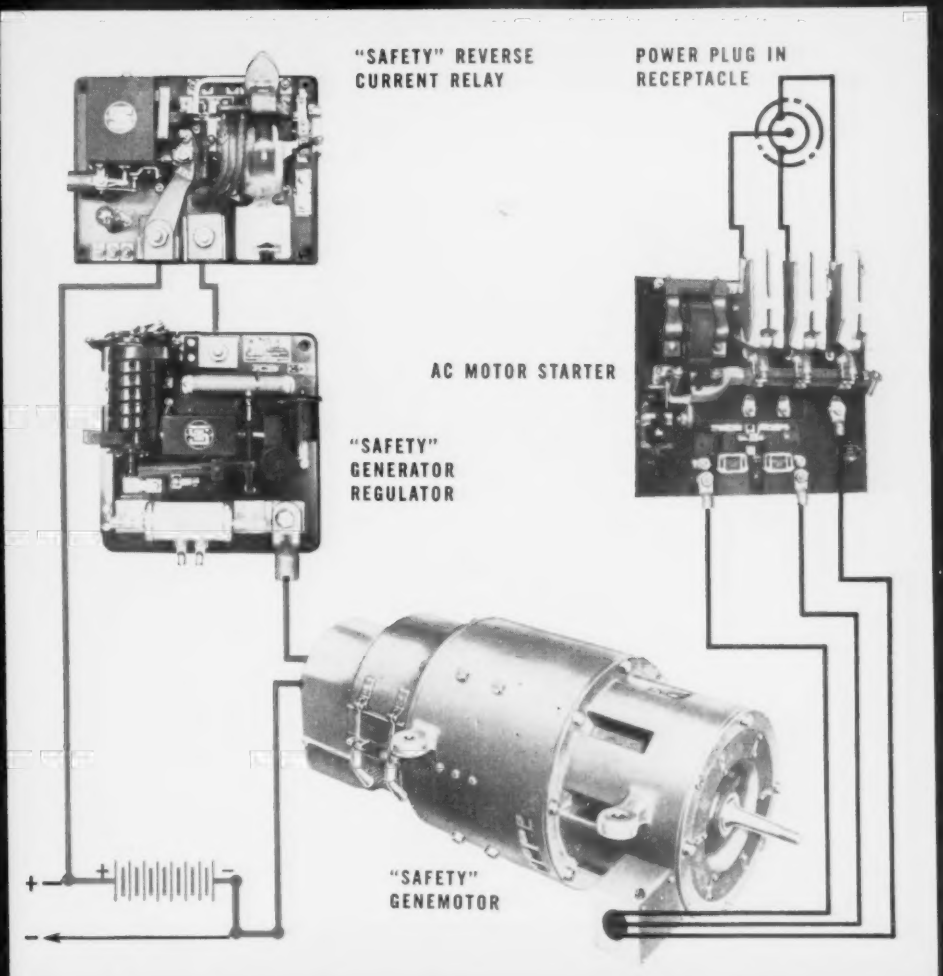
### "SAFETY" GENEMOTORS...

are unsurpassed power plants for modern passenger cars

Designed and precision manufactured for long life with low cost maintenance . . . "Safety" Genemotors include . . .

- liberal use of armature copper and low loss iron to keep electrical losses . . . therefore heating . . . at a minimum
- armatures insulated with Class B material and mounted on shafts of the best alloy steel procurable
- dc armature, ac rotor and cooling fan easily removable as independent units
- all parts dynamically balanced individually before assembly on the shaft . . . assuring full interchangeability
- an automatic polarity reversing switch . . . eliminating maintenance of an additional generator necessary when an exciter is used

"Safety" Genemotors are available in capacities of 25, 30 and 35 kw and in 40, 80 and 140 volts nominal ratings, with 20 or 32 HP AC, 60 cycle, 220 volt motors . . . 12 to 20 kw output on standby.




### "SAFETY" CONTROL EQUIPMENT...

- provides constant voltage regulation and positive current limit for maximum Genemotor protection
- lengthens battery life
- is compact and automatic
- requires minimum locker space
- is simple in design . . . requiring little maintenance . . . thereby reducing labor costs

### "SAFETY" GENEMOTORS and CONTROL EQUIPMENT PROVIDE...

- constant voltage power for all air conditioning electrical equipment and lighting
- full output at very low train speeds . . . assuring quick power availability for re-charging low batteries while cars are enroute
- standby power in excess of requirements for pre-cooling cars and battery charging

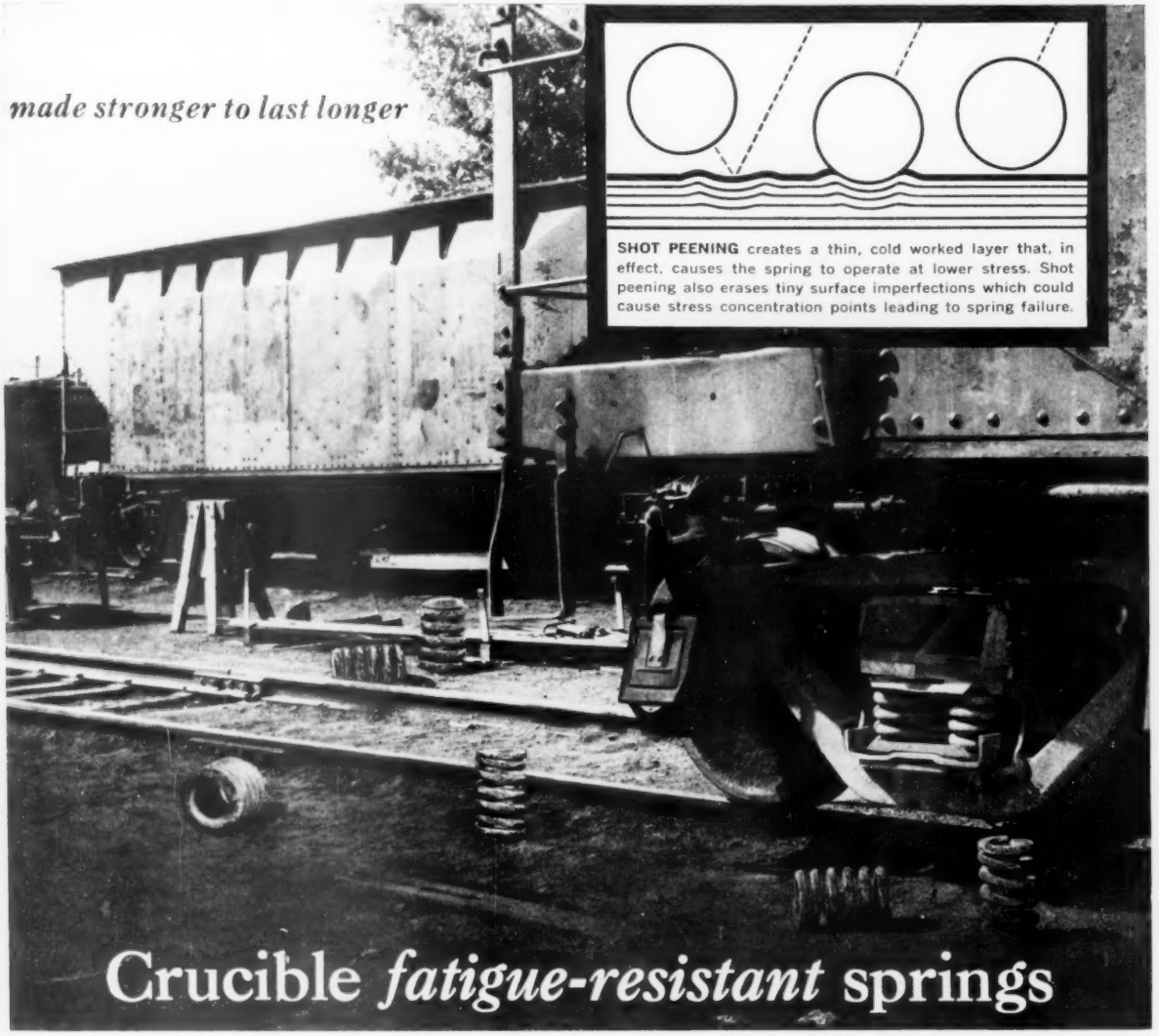
Over 5,000 "Safety" Genemotor and Control Equipment applications on railroads throughout the United States, Canada and Mexico are actual proof of unparalleled performance in service.

## SAFETY INDUSTRIES, INC.

FORMERLY THE SAFETY CAR HEATING & LIGHTING COMPANY, INC.

NEW YORK · CHICAGO · PHILADELPHIA · RICHMOND · ST. LOUIS · SAN FRANCISCO · NEW HAVEN · MONTREAL

"SAFETY" PRODUCTS INCLUDE: Air-conditioning Equipment • Genemotors • Generators • Fans • Regulators • Blower Units Lighting Fixtures • Switchboards • Luggage Racks • Motor Alternators • Dynamotors • Motor Generators • Dual Voltage MG Sets


made stronger to last longer
SHOT PEENING creates a thin, cold worked layer that, in effect, causes the spring to operate at lower stress. Shot peening also erases tiny surface imperfections which could cause stress concentration points leading to spring failure.
Crucible *fatigue-resistant* springs

# help keep cars off the repair tracks

Three major railroads report: 90% of all car springs fail due to permanent set – only 10% due to other causes. You can reduce the frequency of failures by using Crucible's single heat treated *fatigue-resistant* springs. They're *made stronger to last longer*, yet cost no more than conventional springs.

Crucible *fatigue-resistant* springs are stronger because they're single heat treated and shot peened. These processes provide better hardenability, higher elastic limits and greater resistance to working stresses.

Help keep cars off the repair tracks and reduce "bad-order" car expenses by using Crucible *fatigue-resistant* springs. They're your best guarantee of long, low-cost spring service. For further details, write for folder: *Spring Division, Crucible Steel Company of America, McCandless Avenue, Pittsburgh 1, Pa.*

**CRUCIBLE** spring division

**Crucible Steel Company of America**

This machine for excavating intertrack ballast is only one of the many different types of track maintenance equipment lubricated with ESSO MULTI-PURPOSE GREASE H.

# One grease for many uses—
# ESSO MULTI-PURPOSE GREASE H simplifies maintenance

**For all types of maintenance-of-way equipment** . . . ESSO MULTI-PURPOSE GREASE H. It is an ideal lubricant for such diverse equipment as ballast cleaners, tampers, cribbers, screeners and many other pieces of machinery, including automotive and construction equipment. The use of *one* grease instead of many is more efficient, more economical. Because of these benefits, more and more railroads have come to use and depend on ESSO MULTI-PURPOSE GREASE H.

**THREE IMPORTANT ADVANTAGES back the use of ESSO MULTI-PURPOSE GREASE H:**

1. Outstanding in quality, it has been proved on the road and in the lab in a multitude of applications. Meeting the rigid requirements for automotive wheel bearings, it performs equally well in applications requiring a general purpose grease.
2. ONE grease performs in many applications, eliminating the need for a large variety of greases. It prevents application of the wrong grease and possible damage to machinery.
3. Storage and handling problems are reduced to a minimum, resulting in greater economy. It is easier to protect a single container of ESSO MULTI-PURPOSE GREASE H against contamination than several partially empty special-purpose drums.

Esso

**RAILROAD PRODUCTS**

Valuable years of experience in research and development, along with continual testing on the road and in the lab, stand back of the outstanding performance of famous Esso Railroad Products.

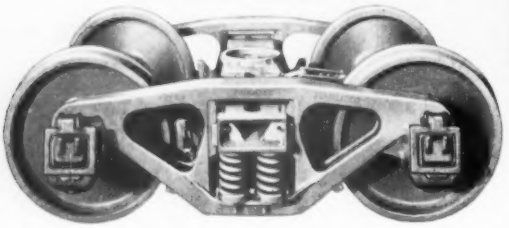
## SM-O-O-THER CAR-GO...
## PROTECTS VALUABLE CARGO

Higher speeds! Tighter schedules! These combine to give equipment and ladings many opportunities to become damaged. Damage claims are a serious problem for any road.

Barber Stabilized Trucks give smoother rides, maximum protection. Destructive forces are self-dampened through the coordinated action of Barber Stabilizer components. Actuating springs, friction shoes and special wear plates . . . arranged in a unique and ever-ready suspension system . . . guard against vertical shocks and bouncing, increase their frictional resistance on the downward stroke. Over-solid spring blows are eliminated!

Two bargains in one! Barber Stabilized Trucks save your ladings; save your equipment.

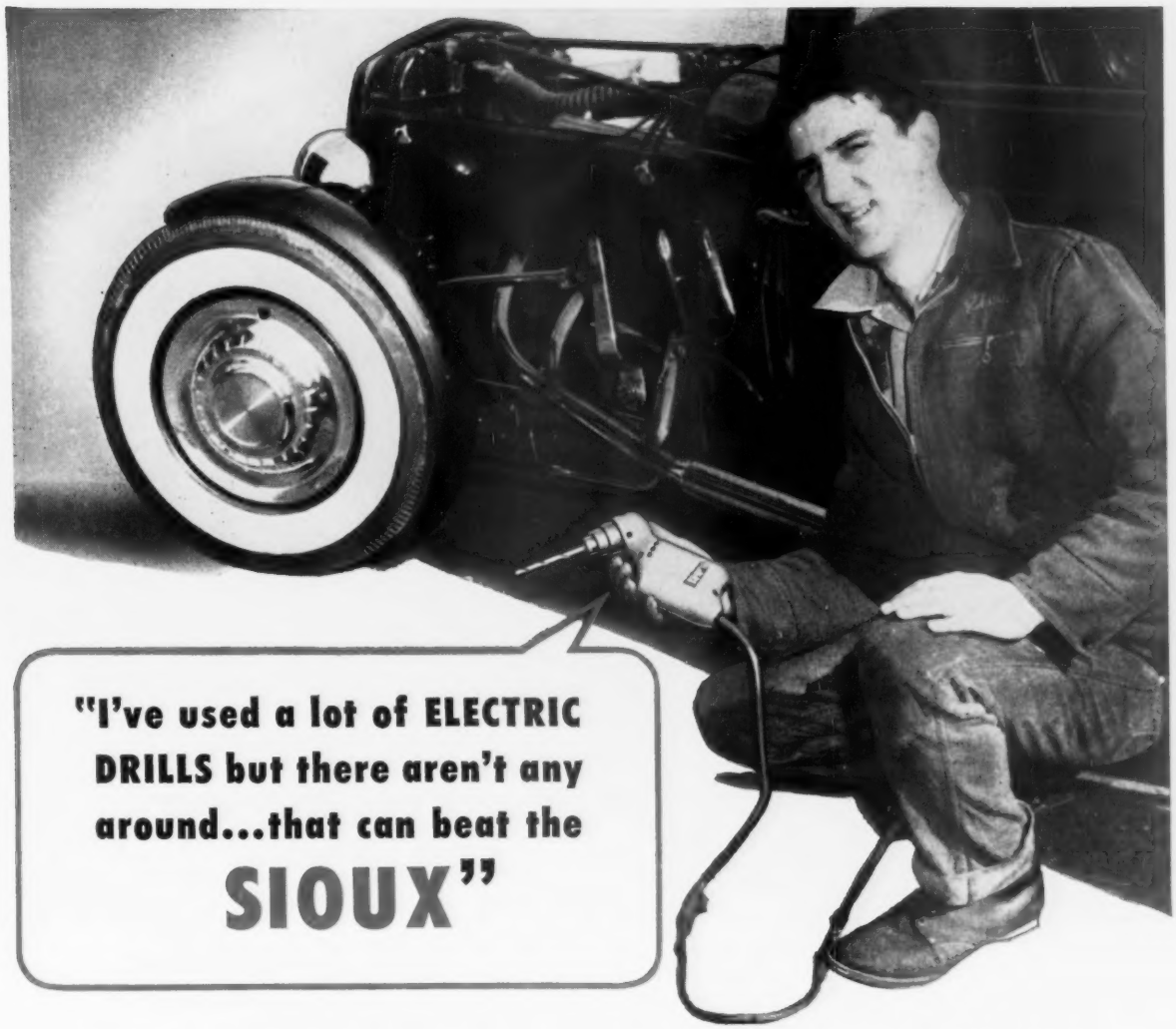
*Quicker, Easier Servicing, Too . . .*



# BARBER

**STABILIZED TRUCKS**

Standard Car Truck Company, 332 S. Michigan Ave., Chicago 4, Illinois. *In Canada:* Consolidated Equipment Co., Ltd., Montreal 2.



**"I've used a lot of ELECTRIC DRILLS but there aren't any around...that can beat the SIOUX"**

"I've been meaning to write this letter to you people for a very long time. In 1952 I bought a 6" Ball Bearing Bench Grinder, a Half Inch Heavy Duty Drill and also a No. 1495 ¼" ALL-ANGLE Drill. In all that time I haven't had a bit of trouble with any of these tools.

All three tools are great, but the ¼" ALL-ANGLE Drill is the reason I'm writing this letter. *I've used a lot of electric drills but there isn't any around that is made that can beat the SIOUX.* With that drill, you can get into the tightest place that you can put your fist into.

You can put oversize drills into it and it won't die out on you. It's the most compact, the most rugged piece of equipment I've used. It couldn't be designed any better, I don't think, and whoever had the brains to design that really deserves a lot of credit.

He must have had us in mind when he designed it because it's *perfect*. In our kind of work we have to be fussy and we don't pass out compliments too easy, but there are so many poorly designed tools for sale, that I really thought you deserved these compliments.

I've never written to a manufacturer before but I appreciate working with good tools and I have to give your drill a lot of credit for our prize winning cars. A lot of people have bought the offset drill after using mine. It sells itself very easily.

You're perfectly welcome to do as you please with this letter, and I would endorse any of your products."

JOHN SHARRIGAN, Watertown, Mass.

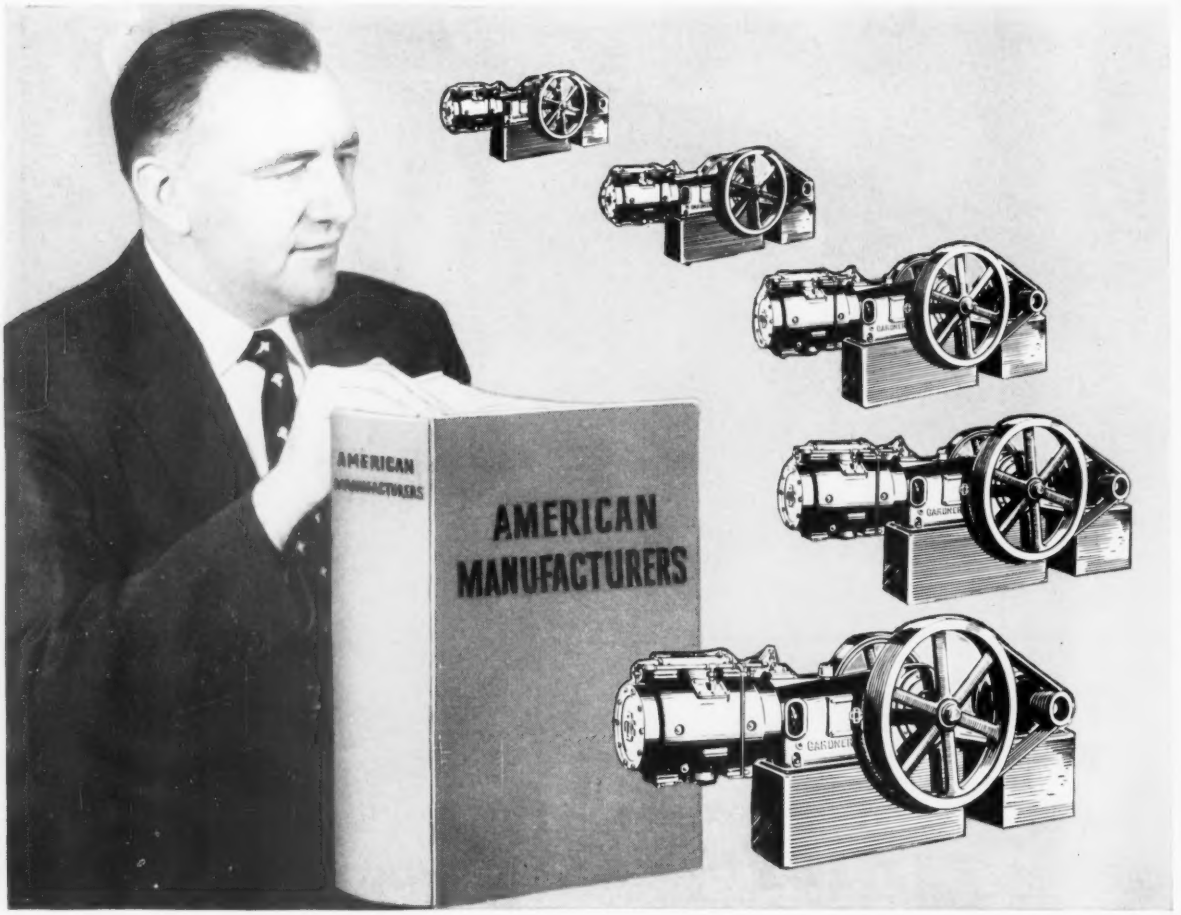
SIOUX

**ALBERTSON & CO., INC.**

SIOUX CITY, IOWA, U.S.A.

LOOK UNDER ELECTRIC TOOLS

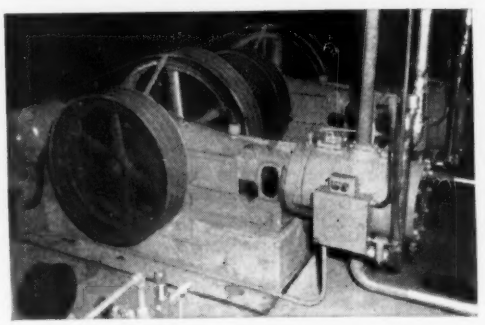
ELECTRIC DRILLS • SCREW DRIVERS • SANDERS • GRINDERS • IMPACT WRENCHES • VALVE FACE GRINDING MACHINES • POLISHERS • PORTABLE SAWS • FLEXIBLE SHAFTS • ABRASIVE DISCS




# Known by the companies that keep it the Gardner-Denver RX compressor

Manufacturers that depend on the RX know it delivers more than air. It delivers years of trouble-free service and economy. Underneath its sturdy main frame are compressor parts engineered to run round-the-clock. Parts easy to inspect and adjust. Designed for smoother operation, better balance and lowest power consumption.

Full details of RX models from 100 to 1410 cfm piston displacement, for pressures from 15 to 150 psi, are described in Gardner-Denver Bulletin HAC-40. Write today.



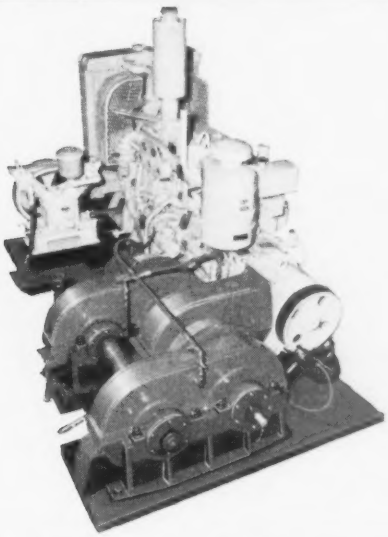
RX installation being used for instrument air in power and light company.

ENGINEERING FORESIGHT—PROVED ON THE JOB
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

## GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

# HOW SUBSTANTIAL SAVINGS IN LOCOMOTIVE CRANE FUEL COSTS ARE BEING MADE WITH THESE STEAM-TO-DIESEL CONVERSION UNITS



The economy of diesel engine operation is such that, with savings on both lower fuel and lower maintenance costs, the initial expenditure on a Brownhoist Diesel Conversion Unit is soon amortized. Brownhoist Conversion Units are engineered to the individual requirements of your crane. The component parts consist of the diesel engine, the torque converter, the roller bearing mounted friction clutches, and the air compressor . . . all mounted on a heavy one-piece slab base ready for installation. These units are completely assembled and tested before shipment to you, and the conversion bill-of-material becomes a permanent part of your crane record, to expedite future service. Write today or contact your Industrial Brownhoist representative (give crane serial number).

**THIS 1925 150 TON WRECKER WAS STEAM, IS NOW DIESEL RESULT:**

**LOWER OPERATING COSTS**

This Brownhoist 150 Ton Steam Wrecking Crane, built in 1925, was recently adapted to diesel with one of our conversion units. Its operators report a substantial savings in maintenance and fuel bills, more than justifying the cost of conversion.

# BROWNHOIST

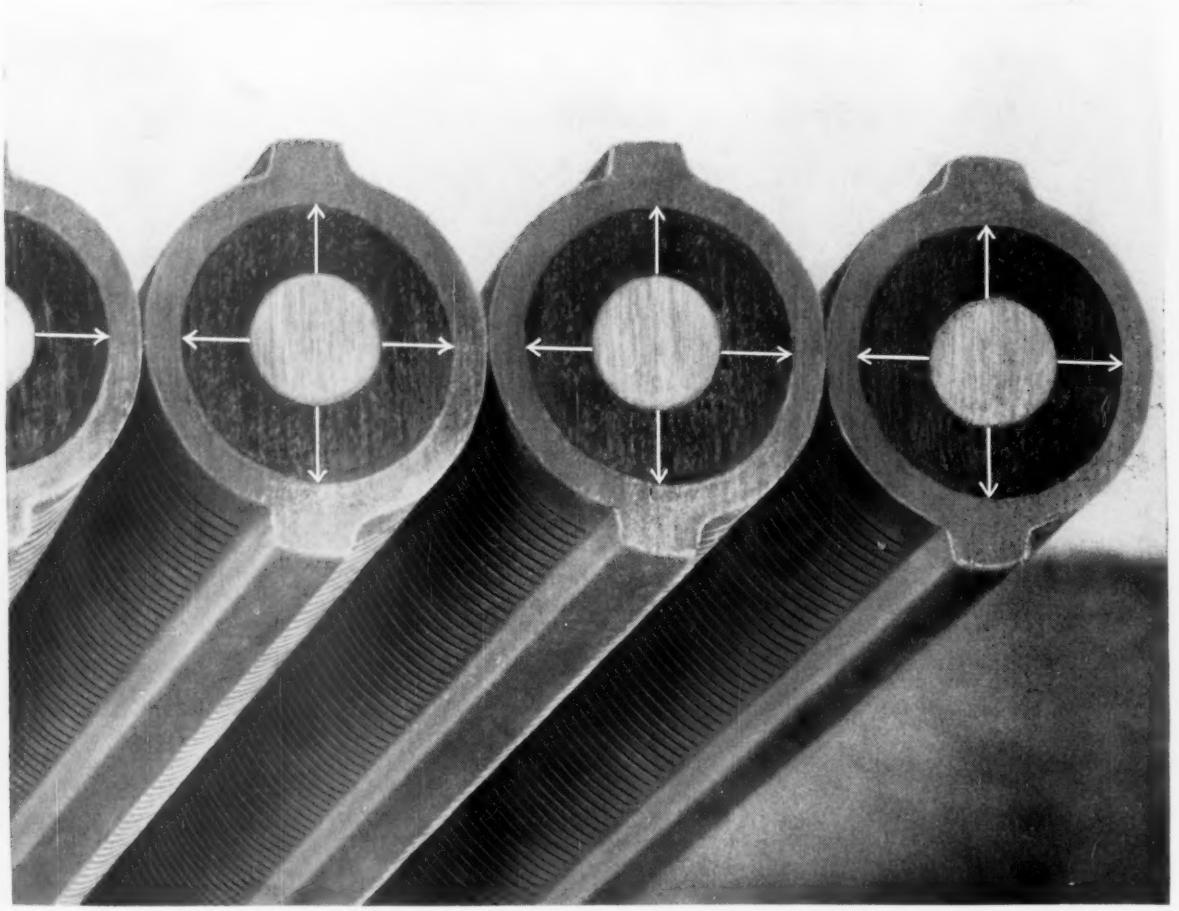
BROWNHOIST MATERIALS HANDLING EQUIPMENT GIVES A LIFT TO AMERICAN INDUSTRY

SUBSIDIARY OF Penn-Texas corporation

**INDUSTRIAL BROWNHOIST CORPORATION**
**BAY CITY, MICHIGAN** • DISTRICT OFFICES: Philadelphia, Washington, Cleveland, Chicago, San Francisco, Montreal
AGENCIES: Detroit, Birmingham, Houston

# EXIDE-IRONCLAD BATTERIES

**For railway diesel starting**



## Power tubes expand without shedding — preserve battery life

BATTERY FOR RAILWAY DIESEL STARTING. Exide-Ironclad Model MVD. Write for Bulletin No. 5348.

Every time you discharge a storage battery, the active material on the positive plates expands. But the plate grids don't expand. This is basic.

On most batteries, the expanding active material tends to shear off from the nonexpanding grid every time the action takes place. But this can't happen in the Exide-Ironclad Battery. The reason is simple.

Active material is formed concentrically around the spinelike grid and held inside the plastic tubes. Expansion is predominantly in an outward direction—hence no shearing. Active material remains firmly locked to the underlying grid structure. And the flexible plastic tubes yield and take up as needed.

This extra protection against shedding of active material is only one of the many reasons for the long life of Exide-Ironclad Batteries. When you order heavy duty batteries, or the equipment requiring them, be sure to specify Exide-Ironclad. Write for detailed bulletin. Exide Industrial Division, The Electric Storage Battery Company, Philadelphia 2, Pa.

Exide®

# On express lines . . . and at whistle stops . . .

## The performance and the brand are the same around the world

**Other Outstanding Shell Industrial Lubricants**

**Shell Tellus Oil**—for closed hydraulic systems

**Shell Alvania Grease**—multi-purpose industrial lubricant

**Shell Turbo Oil**—for utility, industrial & marine turbines

**Shell Dromus Oils**—cutting oils for high-production metalworking

**Shell Rimula Oil**—for heavy-duty diesel engines

SHELL TALONA R Oil 40 offers two outstanding reasons for its acceptance as a top-rated diesel-electric locomotive lubricant. It provides superior anti-wear protection and maintains engine performance.

Greatly reduced wear on pistons, rings and cylinder liners is assured because of the selected combination of additives used in Talona® R Oil 40. It has high oxidation stability, combined with resistance toward corrosion and sludge formation. It prevents ring fouling and provides excellent detergent-dispersant action.

Today—railroad operators abroad can enjoy the same Talona R Oil 40 the domestic carriers rely upon. For complete information, write to Shell Oil Company, 50 West 50th St., New York 20, N.Y., or 100 Bush Street, San Francisco 6, Calif.

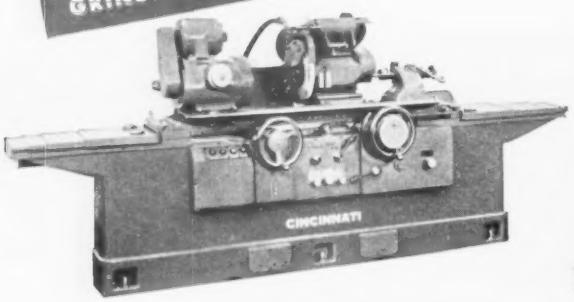
# SHELL TALONA R OIL 40

SHELL

# Cincinnati's setup timesavers

## reduce cost of your small lot precision grinding

CINCINNATI® FILMATIC 12" x 36" UNIVERSAL GRINDING MACHINE

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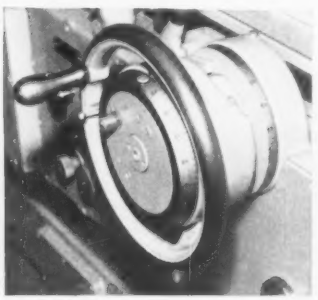

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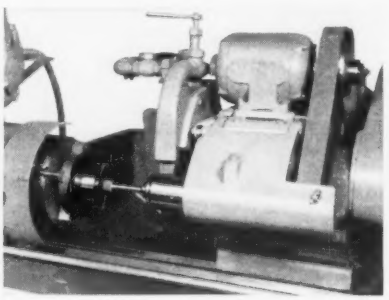

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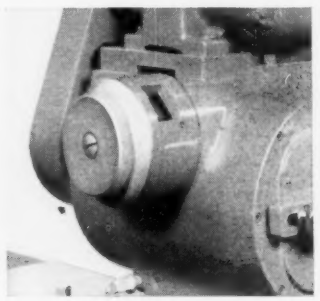


Small manufacturing quantities may be good for inventory accounting, but they're tough on costs. In precision toolroom grinding, CINCINNATI® FILMATIC Universals offer several ways to eliminate or greatly reduce the setup element of cost.

1 **Power rapid positioning** of wheelhead. Saves time and energy, especially when setting up for widely varying diameters (extra equipment).

2 FILMATIC **grinding wheel spindle bearings** require no adjustment for any job assigned to the machine.

3 **Two-speed cross feed mechanism** facilitates multiple diameter grinding; incorporates pickfeed all the way to final size.

4 **Internal grinding unit** is hinged at the front of the wheelhead casting, always ready for internal work.

5 **Instant work speed selection** for the diameter being ground. Just turn the dial with one hand, that's all there is to it.

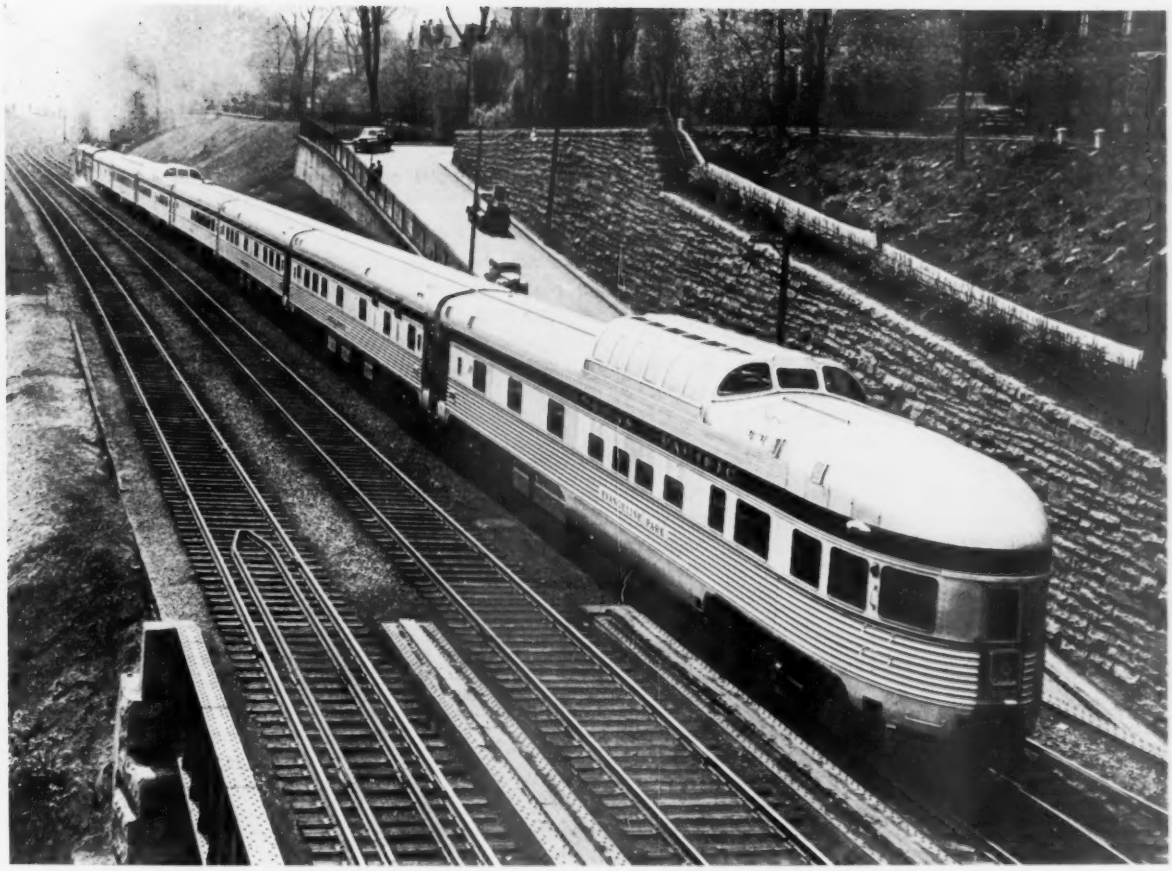
Other ways in which new CINCINNATI FILMATIC 12", 14", 18" Universal Grinders can reduce costs in your shop are outlined in catalog No. G-663-1. May we send a copy to you? You will find brief specifications in Sweet's.

**CINCINNATI GRINDERS INCORPORATED**
**CINCINNATI 9, OHIO**

# CINCINNATI

CINCINNATI

**CENTERTYPE GRINDING MACHINES • CENTERLESS GRINDING MACHINES • ROLL GRINDING MACHINES • SURFACE GRINDING MACHINES • CHUCKING GRINDERS • MICRO-CENTRIC GRINDING MACHINES • CENTERLESS LAPPING MACHINES**



Afternoon departure of "Canadian" from Montreal finds cars prepared for 2,881-mile run to Vancouver. Another section leaves Toronto and is merged with this one at Sudbury, Ont., to form the 15-car train which makes most of the transcontinental trip.

***With Records and Scheduling . . .***

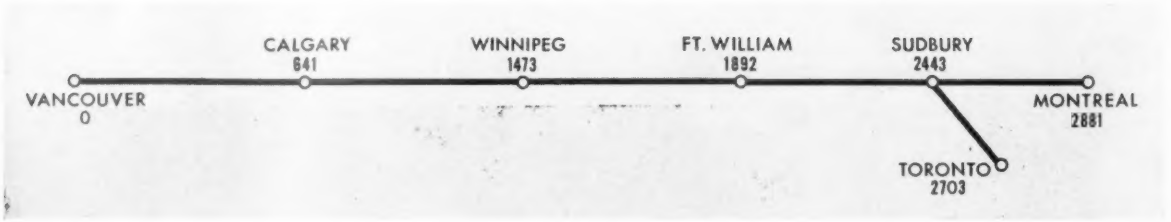
# CPR Plans To Keep 'Canadians' on the Road

*Progressive preventive maintenance is intended to insure that 173 Budd-built stainless-steel cars will not spend any time in Canadian Pacific back shops for class repairs.*

## Part I

Everything about the design, servicing and operation of the Canadian Pacific's 173 stainless-steel passenger cars has been worked out to keep them on the road. Most of the CPR's transcontinental passengers are handled in these coaches, sleepers and dining cars. The Canadian Pacific has one of the most elaborate preventive maintenance programs ever worked out for a passenger car fleet.

The entire operation is based on the assumption that the cars are not to be back shopped for routine heavy repairs. Scheduling is worked




Most of the Canadian Pacific's streamlined, stainless-steel passenger equipment operates over the railroad's transcontinental main line. Indicated are terminals where maintenance or servicing is carried on, and the figures indicate mileages from Vancouver.

out to do the heaviest maintenance and overhaul jobs while the cars lay over between each of their transcontinental trips.

A big factor in the choice of stainless-steel equipment was that it would not require exterior painting, and that it would be unnecessary to inspect and paint the car structures at regular intervals. At the same time, the CPR insisted on plastic laminated interior walls, doors, ceilings and partitions so that the cars would not require extensive inside painting.

While these cars were being designed and built by Budd, the CPR's chief of motive power and rolling stock was making plans for their servicing and maintenance. The CPR had no prior experience with the operation of stainless-steel, lightweight cars.

### The "Canadian" Fleet

The cars, which Budd was then b uilding for the CPR, were to equip a new transcontinental train—"The Canadian"—and to put some streamlined equipment on the "Dominion," the train which until then had been the "flagship" of the CPR passenger fleet. (*Railway Locomotives and Cars*, December 1954, p. 47). The order consisted of the following:

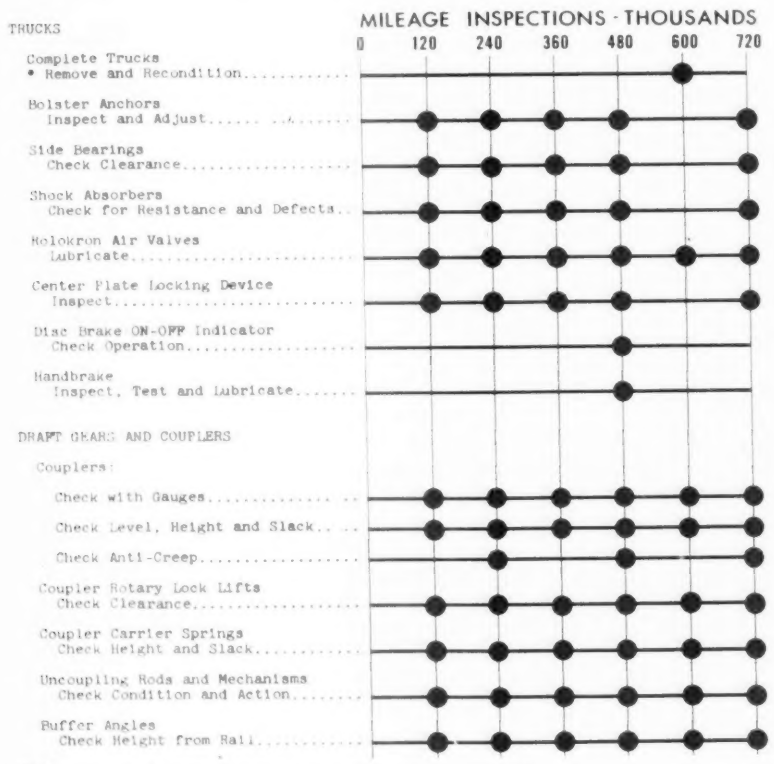
- 18 Cars — Dome, observation, lounge, 3 double-bedroom, 1 drawing-room sleeper ("Park" series).
- 29 Cars—8 duplex-roomette, 3 double-bedroom, 1 drawing-room, 4 section sleeper ("Chateau" series).
- 42 Cars—4 section, 4 roomette, 5 double-bedroom, 1 compartment sleeper ("Manor" series).
- 30 Cars—60-seat coach (100-129 series).
- 18 Cars—Dome, coffee shop, 26-seat coach (500-517 series).
- 18 Cars—Dining Car.
- 18 Cars—Baggage — dormitory car (3000-3017 series).

In use today these cars are assembled into seven complete trains of "Canadian" equipment, and the balance of the cars are used in the "Dominion." There are some extra coaches and sleepers at times assigned to runs such as Montreal-Toronto and Montreal-Saint John, N. B.

The "Canadian" takes 70 hr for the 2,881-mile Vancouver—Montreal trip, and the "Dominion" has an 83-hr schedule for this same run. Both the "Dominion" and the "Canadian" start from and terminate at two eastern terminals—Montreal and Toronto. The Montreal and Toronto sections of each train merge into a single train at Sudbury, Ont., for the 2,444-mile run to Vancouver.

The dome cars were ordered without any spares. To cover the assignments specified in the public timetables requires that none of these 36 cars ever miss a trip. Studies of the procedures used on

## This Is CPR Maintenance Schedule




*Serial numbers of items removed and applied must be reported.

(Continued on page 37)

U. S. railroads and a knowledge of the service to which the new cars would be assigned led the CPR to establish a complete progressive maintenance program for all of the 173 cars. This puts maintenance of all important mechanical and electrical items on every car on a mileage inspection and overhaul basis, and has required the same sort of records and control that are typical for aircraft and diesel locomotive operations.

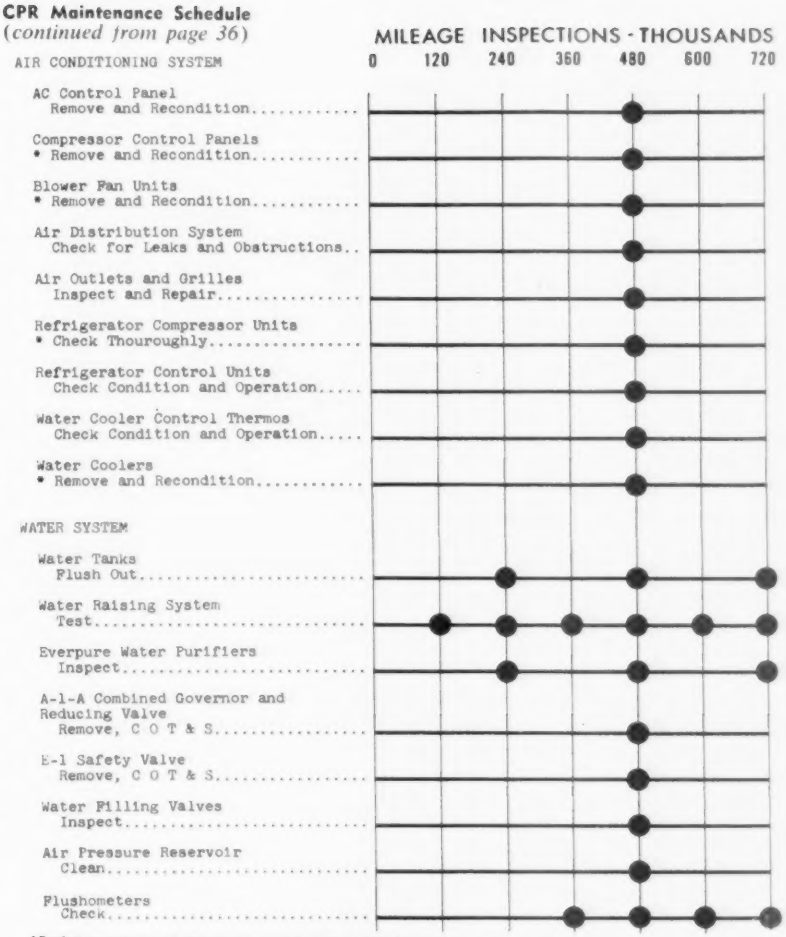
### Establishing the Program

The first car was delivered in July 1954, and the last cars came from Budd about a year later. The CPR began to apply serial numbers to every major mechanical and electrical component on every car when it arrived from the builder. Most items under the cars have embossed metal tags showing the CPR serial numbers, and interior units and protected equipment have ½- or 1-in. painted serial numbers stencilled on them. Items receiving serial numbers were the following (separate numbers if there are two or more such components on the one car):

Trucks
Spicer Drive
Spicer Drive Shaft
Spicer Clutch
Genemotor
Batteries
Motor Generator Set
Compressor
Condenser Motors
Generator Regulator
Reverse Current Relay
Lamp Regulator
Motor Generator Starter Panel
Vibrator
Compressor Starter Panel
Blower Fan Motors
Exhaust Fan Motors
Water Cooler Motors
Water Cooler Pump Motor
Refrigerator Motors
Water Cooler

A Kardex record system was established in the office of the chief of motive power and rolling stock in Montreal. Information from the serial numbering of all the components supplied the initial data for an individual card for each component on every car in the order, the "Component Removal, Failure and Overhaul Record." This card shows the name of the component

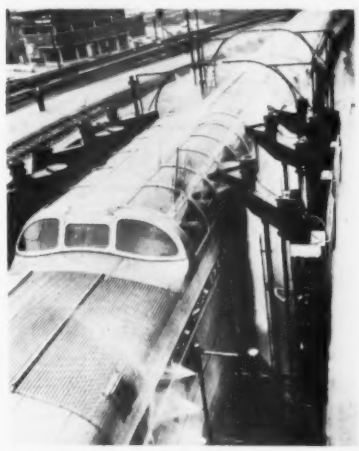
**CPR Maintenance Schedule**
(*continued from page 36*)




*Serial numbers of items removed and applied must be reported.

(*Continued on next page*)

and its rating, then gives the CPR serial number and that applied by the manufacturer. Continuous posting shows the original application and a continuing history of every item. These record can point out weaknesses in parts, or can be the basis for extending the mileage removal period.

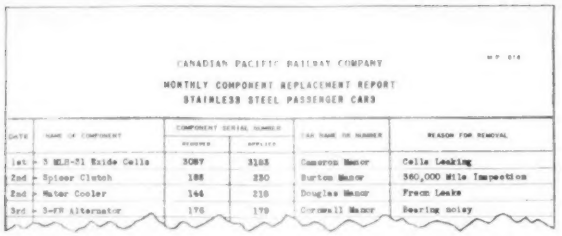


Car washing is mechanized at Vancouver, Calgary and Toronto (above). Car cleaning procedure was an integral part of the planning which has made the cross-country operations of the streamlined "Canadians" and "Dominions" successful.

A second file of cards in the system is the "Passenger Car Mileage Record." There is an individual card for each of the 173 stainless-steel cars, and each is posted monthly with the mileage accumulated that month, and with the total accumulated mileage to that date. These cards supply the mileage which is the basis for ordering the periodic preventive maintenance programs for each car.

The third Kardex record is a record of this periodic preventive maintenance work. It indicates the date when the maintenance terminal was advised that the car was due for mileage work. After the terminal has reported back, the card is posted to indicate when the mileage repairs were completed.

Once the preventive maintenance



CANADIAN PACIFIC RAILWAY COMPANY

MONTHLY COMPONENT REPLACEMENT REPORT
STAINLESS STEEL PASSENGER CARS

| DATE | NAME OF COMPONENT | COMPONENT SERIAL NUMBER REMOVED | COMPONENT SERIAL NUMBER APPLIED | CAR NAME OR NUMBER | REASON FOR REMOVAL |
|---|---|---|---|---|---|
| 1st | 3 NLB-31 Exide Cells | 3087 | 3185 | Cameron Manor | Cells Leaking |
| 2nd | Spicer Clutch | 188 | 230 | Burton Manor | 360,000 Mile Inspection |
| 2nd | Water Cooler | 144 | 210 | Douglas Manor | Freon Leaks |
| 3rd | 3-KW Alternator | 176 | 179 | Cornwall Manor | Bearing Noisy |

What was replaced and why are indicated by monthly reports filed by each of the maintenance terminals such as this report from the general car foreman at Toronto Union Station. This data then goes on to the Kardex records.

ABBOTT MANOR — BUDD CO. — 1954

| | | | |
|---|---|---|---|
| 120,000 | July 19-55 | Aug 6-55 | Toronto |
| 240,000 | Feb 1-56 | Feb 10-56 | Toronto |
| 360,000 | July 1-56 | July 11-56 | Toronto |
| 480,000 | | | |

PASSENGER CAR MILEAGE RECORD

ABBOTT MANOR — BUDD CO. — 1954

| | YEAR 1954 | | | YEAR 1955 | | | YEAR 1956 | |
|---|---|---|---|---|---|---|---|---|
| | MILEAGE | MILEAGE TOTAL | | MILEAGE | MILEAGE TOTAL | | MILEAGE | MILEAGE TOTAL |
| JAN | | | JAN | 15,529 | 86,142 | JAN | 8,597 | 254,923 |
| FEB | | | FEB | 15,394 | 61,536 | FEB | 18,918 | 250,061 |
| MAR | | | MAR | 3,326 | 60,360 | MAR | 15,699 | 265,760 |
| APR | | | APR | 12,276 | 72,638 | APR | 22,444 | 288,254 |
| MAY | | | MAY | 20,801 | 93,439 | MAY | 24,568 | 312,802 |
| JUNE | | | JUNE | 20,402 | 113,841 | JUNE | 23,264 | 336,066 |
| JULY | | | JULY | 17,455 | 131,296 | JULY | 24,615 | 360,681 |
| AUG | | | AUG | 16,844 | 148,140 | AUG | 23,748 | 383,939 |
| SEP | | | SEP | 23,056 | 171,198 | SEP | 22,565 | 406,704 |
| OCT | | | OCT | 21,654 | 192,840 | OCT | 20,057 | 426,891 |
| NOV | 513 | 513 | NOV | 11,269 | 204,089 | NOV | | |
| DEC | 20,106 | 20,619 | DEC | 23,397 | 227,486 | DEC | | |

ABBOTT MANOR

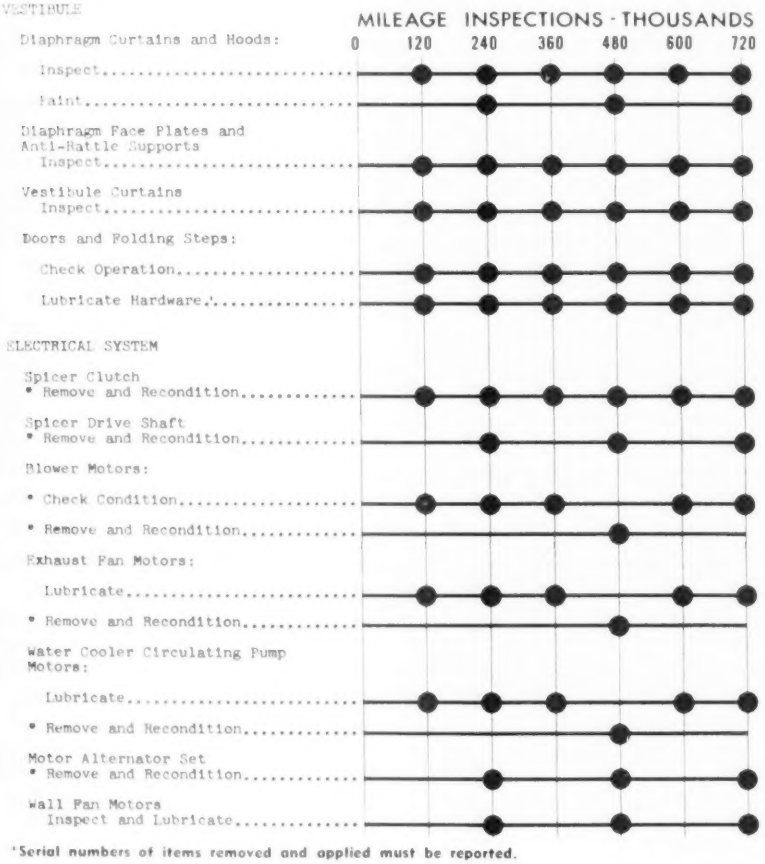
Mileage repair record (top) and passenger car mileage record (bottom) control scheduled maintenance program.

program was decided upon, and before the cars were delivered, it was necessary to fix the locations where all of the work on this new fleet would be carried on. This involved not only planning for preventive maintenance, but making arrangements for all other repairs and for all inside and outside cleaning.

In the coach yard at Glen Yards in Montreal there were already facilities for the preventive maintenance work anticipated for the new cars. Toronto had a comparable set-up. At the time the "Canadians" were delivered, Vancouver had the only mechanical car washer on the system. Vancouver has something else—a mild climate which allows the washer to be used 10 months of the year. The CPR has found it useless to attempt to run cars through mechanical washers when the temperature is below 28 deg F.

**CPR Maintenance Schedule**

(*Continued from preceding page*)




*Serial numbers of items removed and applied must be reported.

All three terminals have long pits for undercar inspections. Shop layouts and switching requirements at all of the terminals also entered into the final decision.

The decision was that all of the scheduled mechanical and electrical work on the stainless-steel cars would be assigned to Montreal and Toronto. The major cleaning is assigned to Vancouver. All of these cars operate into either Montreal or Toronto, and more than 90 per cent of them regularly run into Vancouver. The decision, although based primarily on existing installations and operating procedures, did, however, require extensions and new facilities at all three terminals.

Vancouver got additional brushes on its car washer so that roofs and domes can be cleaned. The coach-yard shop at Montreal was enlarged and 15-ton overhead cranes were put in at both Montreal and Toronto for handling trucks. Store facilities at all three points had to be enlarged and parts stocks had to be established at each. Toronto got a Whiting machine for washing coach sides in 1956 and an installation is considered for Montreal.

The Canadian Pacific attempts to operate its stainless equipment in solid, unbroken consists. However, wheel work and the mileage maintenance program do break the trains up. Vancouver repairs only failures. To do this it is necessary to stock such components as wheel sets, coils, and bearings. Major jobs result in having the car involved sent back through to Montreal for repairs. Toronto sends Angus shops, in Montreal, components which require special testing and rebuilding procedures. These components include water coolers, batteries, gene-

ITEM MOTOR ALTERNATOR SERIAL NO. 224

TYPE 3 K.W. MFGR S.C. H&L CO. 256468

| CAR | DATE APPLIED | DATE REMOVED | ACCUM MILEAGE OF COMPONENT | DEFECT |
|---|---|---|---|---|
| Palliser | Mar. 15-55 | Nov. 17-55 | 102328 | Armature % |
| Eileen Mavis | Nov. 30-55 | Dec. 10-56 | 230405 | Mileage Insp. |
| Louise | Jan. 6-57 | | | |

**Component removal, failure and overhaul record is method selected by CPR for keeping accurate history of each important component. From these come data for altering scheduled maintenance.**

motors, generator regulators, and reverse current relays. Intermediate terminals, such as Calgary, Winnipeg and Sudbury, make only emergency repairs to the stainless cars while they are enroute.

### Cleaning Procedures

Although cleaning has been the assignment at Vancouver, this does not mean that no cleaning is done at Montreal and Toronto. All three terminals perform approximately the same amount of trip cleaning. This includes washing the exterior car sides, vacuuming and cleaning the interiors, and washing windows. Dome and side windows are washed at all three terminals and en route at Calgary and Ft. William. At Calgary the exterior of the train is washed mechanically. Cleaning of the car roofs is done only at Vancouver because the washing machine is equipped for this.

Quarterly cleaning — the most complete type — is performed at Vancouver. This includes shampooing carpets and upholstery, blowing matresses, and washing down the plastic interiors. The upholstery, carpets, berth curtains and other fabrics are all renewed on a condition basis rather than as a part of the mileage maintenance program.

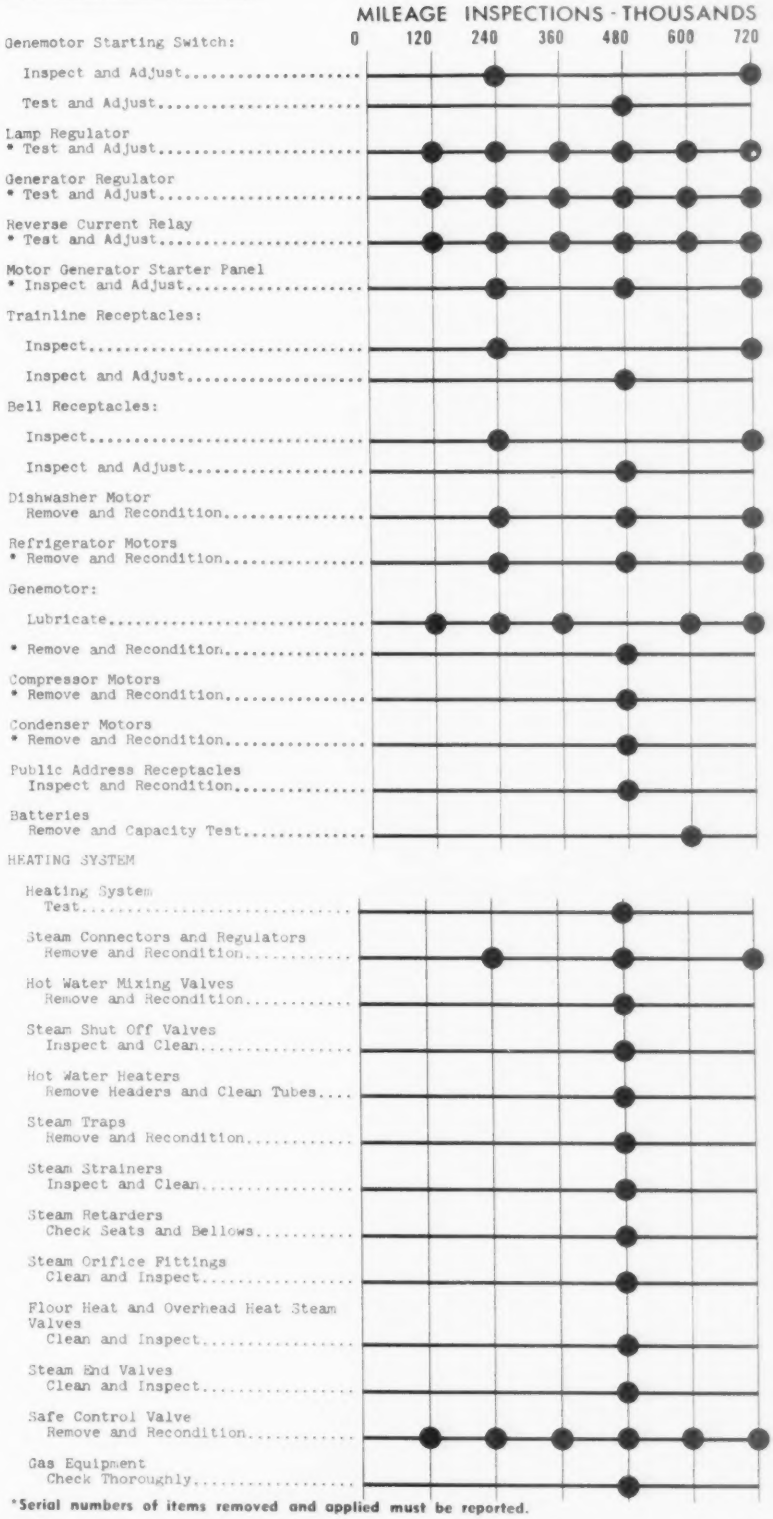
Painting is handled in much the same way. The exterior paint is limited to a tuscan red letter board with gold lettering. This is retouched and repainted as necessary. The bottom of the car and the underbody components are also painted. Since the cars have been in service (over three years), there have been two general underframe paintings.

To facilitate the renewal of worn fabrics or floor covering and the replacement of broken windows or electrical fixtures, the CPR catalogued and diagrammed all of this data for each of its stainless passenger car types. This makes it possible for Vancouver to inform Montreal that a car en route will require a new carpet section, a new piece of upholstery, or new drapes

(*Continued on page 51*)

**CPR Maintenance Schedule**

(*Continued from page 38*)




***Serial numbers of items removed and applied must be reported.**

***Norfolk & Western Finds . . .***

# Lubricator Pads Do Reduce Hot Boxes

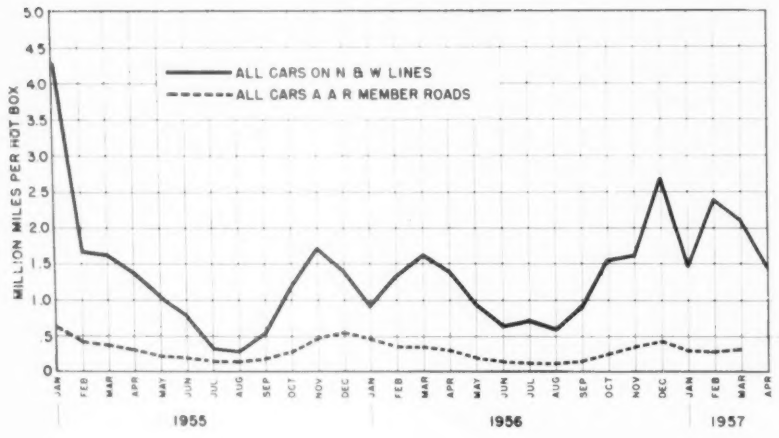
Efforts by member railroads aimed at reducing hot boxes were illustrated for the annual AAR Mechanical Division meeting when Chairman C. E. Pond described the activities of the Norfolk & Western in this field. The N&W's GSMP said that his road's efforts so far have been "fruitful," but that "performance is not what it should be." The road is working diligently to improve it.

Hot box reduction across the years has been accomplished with costly journal box servicing. "If the conventional plain bearing is to continue to be standard for American railroads," Mr. Pond warned, "we must find ways to reduce this servicing cost."

Trial installations of two types of lubricating pads late in 1954 proved so encouraging that early in 1955 the N&W began to apply these devices in large numbers to new and existing cars. They have performed 2.5 times better than cars with conventional waste packing, and have required less servicing. But these lubricators are not "a cure-all for hot boxes," according to Mr. Pond.

"Lubricating pads available today can and should be greatly improved," he asserted. Difficulties include the inability of some designs to wick AAR car oil in sufficient quantities during cold weather, and a reduction in their general wicking ability as they grow older and become contaminated with dirt. Currently, oil companies are working to develop a car oil which will wick better in winter months and at the same time have the lubricating quality and load-carrying characteristics

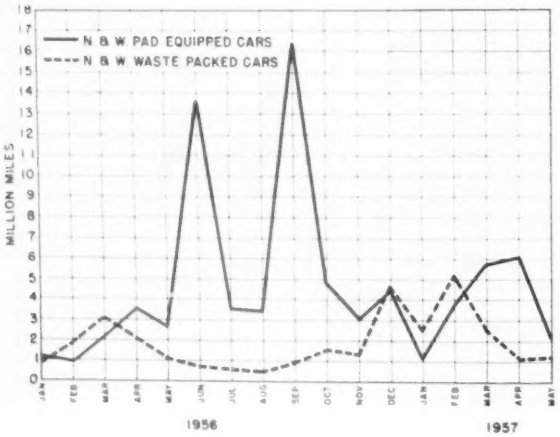
## N&W Is Better Than Average; Still Is Not Satisfied

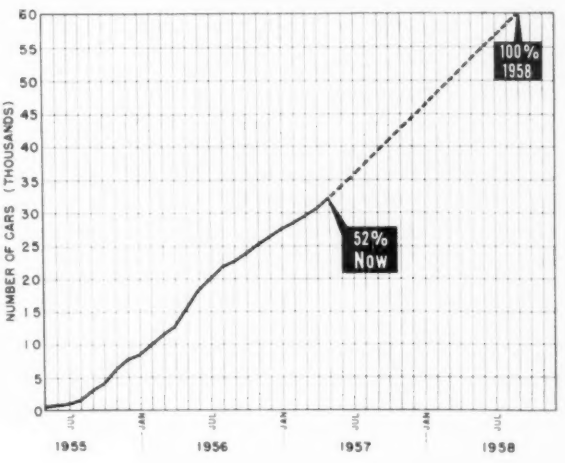



LEFT—The N&W hot box record is better than the average for all railroads. "While some of our efforts have been fruitful," said Mr. Pond, "our performance is not what it should be . . . and we are working to improve it.

LOWER LEFT—Pad-equipped cars averaged 3,000,000 miles per hot box; waste-packed cars 1,250,000 cars in 17-month period. In the winter, waste-packed car mileage per hot box topped pad cars in some months; was behind in summer.

BELOW—Starting in the fall of 1954, N&W has steadily increased the number of lubricator pads on its freight cars. Nine types of pads are in use on the 32,000 cars equipped. All N&W freight cars should have them by the fall of 1958.



of present oils. In dumping cars the N&W has had difficulty with loss of oil from boxes (see illus.).

At present this road is fitting up five hundred 70-ton hoppers with controlled-clearance bearings, lubricator pads, journal stops and 50-in. radius wedges. The stops will position the axle so that an effective dust guard seal can be used, and a seal for the front of the box will also be utilized. Decreasing the wedge radius is expected to give better load distribution on the journal.

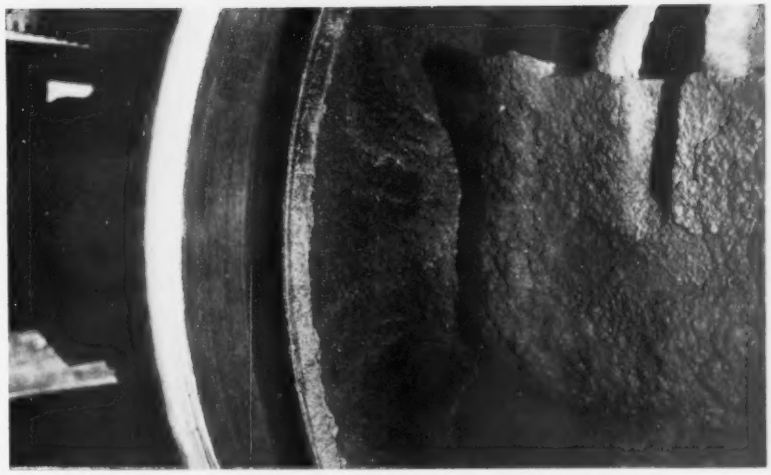
**Better Seals**

"Another development . . . greatly needed, and one which will pay rich dividends, is a good seal at the back of the box at the dust guard opening," according to the Mechanical Division chairman. He went on to report that to retain oil in boxes, particularly on pad-equipped cars on rotary dumpers, an improved seal must be found for the front of the journal box too.

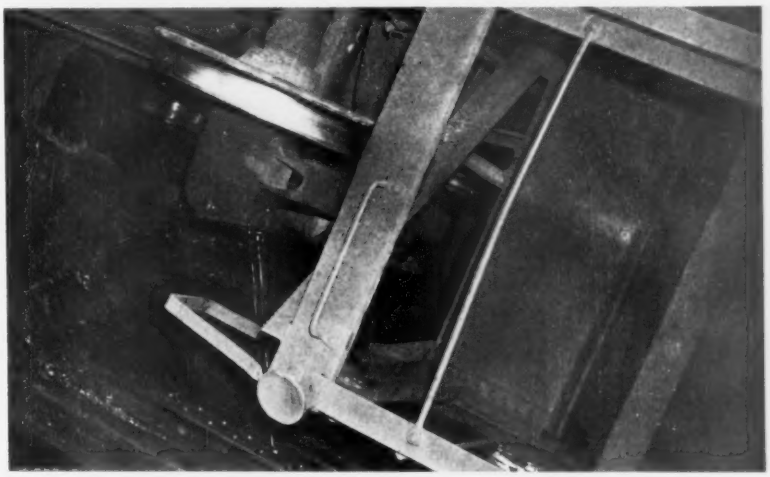
"Until that time when hot boxes can be reduced to the lowest possible minimum," warned Mr. Pond, "the use of some type of hot box detection device that is accurate and reliable will be of great value to the railroads." He went on to describe the installation and operation of one such device at the entrance to one of the important N&W yards.

Devices of this type (Railway Locomotives and Cars, June 1957, p 48) employ infrared pyrometers which electronically actuate chart recorders that can be located up to four miles from the detectors. "The device is reliable and extremely sensitive. So far its performance has been satisfactory with a few minor adjustments," according to the AAR Mechanical Division chairman.

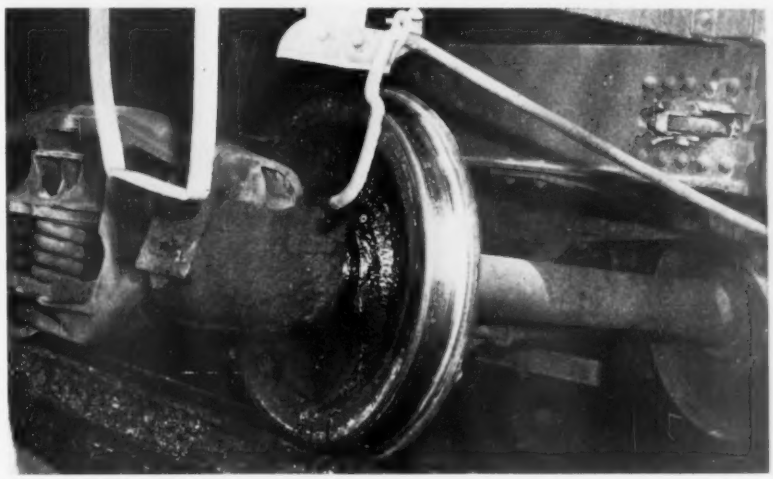
Improvements in seals and lubricating arrangements are all parts of but one problem which confronts railroads in their struggle to receive a share of future traffic. "Progress and research go hand-in-hand," concluded Mr. Pond. "The progress we will make tomorrow largely depends upon research we are doing today. This should point the way to higher standards of service, improved methods and procedures, and better designed rolling stock. If we pursue such a course, the future of the railroads will be bright and encouraging."



Oil film 2-in. wide on tread of car wheel came past dust guard and was thrown across plate to the tread during normal operation. It spreads to the rail and complicates train handling particularly on heavy grades.



On rotary car dumper the inability of the lid to retain oil in the box of this hopper car is a factor in increasing N&W car oil consumption. Mr. Pond pointed out that this is a problem for roads handling ore and coal.



Journal box on the opposite end of same axle of car on rotary dumper lost its oil through the dust guard opening. The speaker emphasized that the need for better seals was true "particularly on pad-equipped cars."

# Research, New Equipment Vital for Tomorrow's RR's

"Changing Federal regulation is not the real answer to this problem of meeting competition, as some leaders in your industry would have the public believe," K. H. Tuggle, ICC commissioner, warned the thirtieth meeting of the AAR mechanical division in Chicago on June 27th. "The real and permanent answer lies right in your own field of research and development. . . . While your mechanical research is clearly on the increase, it must not only continue in that direction, but more importantly, the increase must be paced to keep up with the demands of your industry, your commerce, and your national defense establishment. Meet this demanding overall challenge and you need have no fear as to the future prospects and success of the American railroads."

"Federal regulation," said the ICC spokesman, "can never play more than a subordinate role in the accomplishment of maximum safety in your transportation operations. The best place, in fact the only place for real and lasting accomplishments in carrier safety, is inescapably in your hands." In an address earlier in the week, AAR vice president R. G. May talked about the power brake bill—a legislative proposal which he termed of importance to mechanical officers. He reiterated his earlier statements that it would block progress and changes in operating and maintenance practices and would slow technical development. "The AAR has urged and continues to urge that it be given no further consideration," he concluded.

The mechanical men heard J. W. Barringer, P&LE president, say that "There seldom has been a time when railroads operated to such satisfaction of their owners, their patrons, their employees and managers, not to mention legislative and regulatory bodies, that a so-called 'railroad problem' did not exist. The politicians at one time thought that the problem was that the railroads earned too much money; unhappily that is not today's problem. . . . For reasons of political expediency, railroads are prevented from assuming the corporate and operating status of a mass production industry."

The P&LE president went on to call for collapsing the "umbrella of protection" which the present system of over-regulation holds over railroad competitors. "Powers of rate regulation should be pruned back to those granted by the 1887 Act and the Elkins Amendment of 1903. . . . There are no abuses which could not be controlled by such provisions."

During all of the mechanical division sessions, speakers were almost unanimous in agreeing that research today, and more research and cooperative action tomorrow are keys to the railroad future.

### Seven Cost Cutters

A seven-ply cost-cutting, capacity-building job was assigned to railroad mechanical officers by Norfolk & Western President R. H. Smith.

He told the meeting that railroads must prepare for an increasingly bigger transport task by developing:

- Improved journal lubrication;
- Better draft gears and underframes;
- More efficient air brake maintenance;
- Ways to minimize minor repairs;
- Time savings in car upgrading;
- Common design cars for similar uses;
- Better, more dependable locomotive performance.

**Anticipating** "tremendous" productive growth in the next 20 years, Mr. Smith said "we cannot meet the challenge of an increasing volume of traffic simply by adding to the freightcar pool cars of present design. . . . We must have better cars in 1975. . . . We ought to know within the next few years just what we are going to do to eliminate some of the undesirable features and component parts of present day cars. And if we don't do that promptly and vigorously, we may be too late."

**What the shipper wants** today, Mr. Smith went on, "is not a pleasant, liberal settlement for a damaged shipment, but prompt, on-time delivery of his shipment in good condition."

Train delays and damage in derailments caused by hot boxes, and damage from other causes, cost railroads much in good will and in defection of customers to other transport modes, Mr. Smith declared.

Improvements in draft gears and correct evaluation with cost analyses of what kind of gears and cushion underframes are needed for different commodities were also recommended by the N&W chief executive.

"Now it does not appear desirable or sensible for individual railroads to attempt to find the answers for all of these questions. It would appear reasonable though that this can be done more thoroughly and more economically by the research laboratory of your division working with individual railroads in securing service performance to supplement laboratory tests.

"And it is of the utmost importance that these problems be solved as quickly as possible in order that the many freight cars which will be built within the next 10 or 15 years may offer more protection to the handling of various commodities."

Turning to car utilization, Mr. Smith said too much time is lost by too frequent shopping for minor repairs, inadequate maintenance of air brake systems, and for upgrading cars.

"Mass transportation," he contended, "doesn't have to be at very high speeds while the car is moving, but the car must be moving a great-

C. E. Pond

W. M. Keller

F. Peronto

**AAR Mechanical Division Officers**

er part of the time than it is today."

The mechanical department can't control transit or spotting speeds, Mr. Smith conceded. "But it is to a large extent," he contended, "the responsibility of the mechanical departments to reduce delays on the road and to provide the best means for loading and unloading."

Chairman C. E. Pond, N&W, and Vice-Chairman J. L. Robson, GN, will be serving the second years of their two-year terms during 1957-1958, as will five other members of the General Committee. Reelected for new terms at the Chicago meeting were J. F. Ryan, L&N; H. T. Cover, PRR; J. W. Hawthorne, ACL; J. A. Welsch, IC; and S. M. Houston, SP. The division also chose E. Wynne, Chief of Motive Power and Car Equipment, Canadian National, as a member of the General Committee to replace F. A. Benger, CPR, now retired.

Actions of Division Committees are detailed on the following pages.

# Future Fuels and Standard Fuel Tests for Locomotives

Future locomotives and future fuels for present locomotives are subjects to which the Committee on Locomotives gives much attention. The Committee statements that substantial savings are being produced on many railroads by using an ASTM 2-D fuel (40 to 45 cetane and sulfur under 0.50 percent) and that these are being achieved without modifications in the engines or increase in maintenance were questioned by P. V. Garin, Southern Pacific, who said that this is a normal fuel on the West Coast. It has been used by Western railroads for years, and in his opinion, should not be called "low grade".

The SP has used fuels with cetanes down to 35. With its dual-fuel system, and with proper lubricants and combustion conditions, it has regularly and successfully burned residual-distillate blend fuels. Currently the SP can obtain a residual-distillate blend which costs only 70 percent as much as a straight-run distillate. In the "economy" fuel field the Committee reported that "a few roads are experimenting with dual-fuel systems, others with a blend of distillate and residual oil, but some trouble is being experienced with engine deposits, lube oil deterioration, corrosion of valves, increased fuel filter changes. . . and it is questionable whether the advantage of lower fuel costs will offset the increased maintenance."

### Gas Turbine Fuels

Successful gas turbine operation requires a fuel specification which is quite rigid, Union Pacific experience indicates. The railroad's twenty-five 4,500-hp gas-turbine-electric freight locomotives produced 12.14 per cent of the total UP gross-ton-miles last year, and had operated a total of nearly 9,000,000 locomotive miles by the end of 1956.

The Committee reports that the fuel for these units must be blended and treated to meet the builder's specification. This raises fuel cost, and the Committee went on to report that the operation to date indicates "that with an esimated turbine load factor of 50 percent, the economical limit for cost of turbine fuel is reached when the turbine fuel price reaches 34 percent of the price of diesel fuel. The above fuel data emphasizes the need for a gas turbine which will successfully burn ordinary No. 6 or Bunker C fuel."

The 4,500-hp UP gas turbines have all been equipped with tenders. This has two advantages. The tender insures that the locomotive weight will remain practically constant, and the tender eliminates intermediate fueling stops and permits extending the operating districts without constructing elaborate fueling facilities. The gas turbine power plants and controls have been altered to include (*1*) new design louvered combustion chamber caps and liners (*2*) air-swirl fuel nozzles, (*3*) new design flow divider fuel pump system, (*4*) Hagan exhaust temperature control system, (*5*) heat soak starting cycle modifications.

Experience has changed some original concepts. Because of thermal shock to buckets and because of the long cranking time, it is not practical to shut the turbine down on descending grades or during short periods of standing. The high idle fuel rate of a gas turbine limits it to through serv-

ice. "The gas turbine power plant itself is fairly reliable" the Committee concludes while commenting on control and auxiliary failures.

### Coal-Fired Turbines

The Norfolk & Western steam-turbine-electric locomotive is currently being used in pusher service. The Committee reports that "its fuel efficiency is good, but its dependability—like most experimental locomotives—leaves much to be desired." Its problems have been basically design problems, and changes in component designs have been intended to correct the following problems: (*1*) boiler problems caused mainly by cinder cutting, (*2*) difficulties with the boiler feedwater system centered around the main feedwater pump, (*3*) flashovers of main generator which have led to redesign of the ground relay system. Chairman Einwaechter concluded, "It is not intended to build other locomotives of this type at present."

In referring to the activities of the Locomotive Development Committee's coal-fired gas turbine, the chairman said that "results are encouraging . . . engineering and other work is being progressed between a builder and a Western railroad, and a locomotive should be ready in about two years." Refinements in component design, and changes in gas flow patterns within the turbine are currently under test at Dunkirk.

The coal-fired, exhaust-heated, open-cycle gas turbine at the Gas Dynamics laboratory of McGill University in Montreal had accumulated 1,000 operating hours late last year. There are no plans now to design a locomotive using this power plant. The Baldwin-Lima-Hamilton and D&RGW study of an atomic locomotive under AEC contract continues and is in "the purely theoretical stage." Electro-Motive would release no information on its work with a 2,000-hp free-piston gasifier-and-turbine-electric locomotive.

### Foreign Gas Turbines

Activities and operations involving gas-turbine power plants in Europe were summarized by the Committee, and dealt with nine locomotives. Built and operated in road service have been the following:

- 1,000-hp Diesel-Turbine Mechanical-Drive Locomotive, Gota, Sweden
- 1,000-hp Free-Piston-Gasifier and Turbine Mechanical-Drive Locomotive, Renault, France
- 2,200-hp Gas-Turbine-Electric Locomotive, Brown-Boveri and Swiss Locomtive & Machine Works, Switzerland
- 2,500-hp Gas-Turbine-Electric Locomotive, Brown-Boveri and Swiss Locomotive & Machine Works, England
- 3,000-hp Gas-Turbine-Electric Locomotive, Metropolitan Vickers, England

Untested in service, or designed but not built, are the following:

- 1,750-hp Coal-Burning, Exhaust-Heated-Cycle, Gas-Turbine Mechanical-Drive Locomotive, Parsons and North British Locomotive, England.
- 2,400-hp Free-Piston-Gasifier and Turbine-Mechanical-Drive Locomotive, Alan Muntz, England.
- 2,400-hp Free-Piston-Gasifier and Turbine Mechanical Drive Locomotive, Renault, France.
- 2,750-hp Gas-Turbine Mechanical-Drive Locomotive, English Electric, England.

The Committee on Locomotives continues to watch developments in the hydraulic transmission field, both foreign and domestic.

### Standard Fuel Tests

Duplication of tests by several railroads all using the same fuel for diesel locomotives should soon be unnecessary when the Committee on Lubricants and Fuel for Diesel Locomotives has its "Test Manual for Locomotive Diesel Engine Lubricating Oil and Fuel Oil" approved as a standard procedure. This 79-page manual is the result of cooperative efforts of the AAR, the Society of Automotive Engineers, and the Coordinating Research Council of the American Petroleum Institute.

The Test Manual outlines standard methods for testing and reporting the results of diesel fuel and lubricating oil tests. Said the report, "This manual represents the views of many member roads derived from experience, and incorporates the best thinking of the petroleum and engine building industries. It is hoped that member roads will use it for their own purposes and thus obviate the necessity of duplicating test efforts of other member roads."

No such procedures have been available previously, and in the words of the Committee, "there has been much duplication of effort and considerable disagreement in the views between railroads, and between railroads and their suppliers of engines, lubricants, and fuels. . .In addition to obtaining results which can be interpreted by all roads and their suppliers, it is further hoped that through general use of this manual sufficient uniform data can be collected to permit the Committee to devise more laboratory procedures to take the place of expensive and time consuming field service tests. A number of laboratory tests are included in the Manual which materially reduce the hazards and the cost of field testing untried lubricants and fuels, but more are needed."

### Lubricants and Fuel

The Lubricants and Fuel Committee vouches for the accuracy of the performance obtained and reported by the Southern Pacific with residual-distillate blends in its dual-fuel system locomotives. "However," the Committee states, "there was not uniform Committee opinion relative to the possibility of widespread use of such fuel. Some felt that their use would be confined to those areas where there was availability of such peculiar fuels at attractive prices and where terrain and operating conditions lent themselves to their utilization."

### Standard Definitions

Some standardization in definition and practice could come from the continuing work of the Committee on Locomotives in establishing a uniform class system for repairs to diesel locomotives; in the standard method for defining various types of road failures; and in the submission of a recommended letter ballot item for painting piping on locomotives to identify the fluids they carry. Another letter ballot item deals with the minimum requirements for the main reservoir system for new and rebuilt diesel and turbine locomotives.

The Committee reported on the experiences of four railroads in working on the redesign of locomotive air systems to collect moisture and prevent oil carry-over. An EMD spokes-

man told of the water cooled compressor as one solution and stated that this is now standard on the GP-9 locomotives.

The Committee reported on the experiences of three railroads which have made installations of different types of automatic shut-off devices to prevent the waste of diesel oil during filling operations. This loss is what that Committee termed "a costly and undesirable condition." Some of the devices require the removal of the flame arresters from the locomotive fuel intakes and it was the opinion that "flame arresters can be omitted if required." Commercial devices tested include Aeroquip fuel couplings, Koehler aircraft fuel shut-off valves, and Snyder automatic valves and fueling nozzles.

## New ICC Safety Appliance Regulations Delayed

The Safety Appliance Committee reported a year ago having a working group cooperating with the ICC Bureau of Safety and Service on a revision of safety appliance regulations. Committee members have had the working group's report for preliminary study pending receipt of new proposals from the Bureau. Since none were received, the subject has been dormant for the past year.

The committee agreed with the recommendation of the Arbitration Committee to revise Note 1 of paragraph (r) (8) of Rule 3 to permit the use of wood instead of metal for dome steps and dome platforms under certain conditions. This revision was the result of a request based on service experience indicating rapid corrosion of metal steps and platforms because of spillage of corrosive commodities which reduced the useful life of metal steps and platforms below that obtained with wooden ones.

During the year, requests were made for approval of two new types of metal running board gratings. The committee recommended approval of the Flowforge grating and inclusion in the Rules of Interchange. The Relgrit grating request is presently under consideration.

## Loading Rule Pamphlets Will Not Be Loose-Leaf

Merits of the loose-leaf system for the loading-rule pamphlets are appreciated by the Loading Rules Committee, but despite this, it has been agreed that the pamphlets will be reissued in their present form. However, all of the general rules and tables will be placed in a separate pamphlet, and pamphlets MD-1 and MD-4 will be consolidated, as will pamphlets MD-2 and MD-5.

The Committee continued to point out the importance of properly maintaining freight cars to meet loading requirements. Continued the report, "This situation with respect to clean cars still exists to some extent, and while improvement is being made, a number of cases during 1956 have given much concern."

A member of the Traffic Committee of the American Iron & Steel Institute complimented the Committee on its accomplishments. He went on to comment on the gondola and flat car situations and said that suitable cars of these types are in short supply because they have not been upgraded, not repaired, or not cleaned before being placed for loading.

Poor floors and sides in these cars are reflected in expensive packaging, damage to lading, hazards to steel mill loading crews, and in the necessity to sort cars to match loads. The AISI group urged more mill-type gondolas, and more cars with special loading devices, but urged policing these cars to keep them in their intended services.

Commenting on the activities of the Special Committee on Forest Products Loading, a representative of the lumber industry called for railroads to look forward to providing suitable and specialized equipment for lumber loads. He commented particularly on the bulkhead flat cars and the plug-door box cars. He urged railroad officers to keep these types in mind when ordering new equipment.

Rock Island bulkhead flat car with bulkheads which can be folded down to provide a flush deck (Railway Locomotives & Cars, July 1957, p 43) was praised by a representative of the lumber industry as typical of cars which railroads must provide to meet specialized requirements of shippers. The Special Committee on Forest Products loading devotes all of its activities to the problems of lumber and wood products loading.

# Synthetic Air Hose Gasket Under Development

The Committee on Brakes and Brake Equipment is investigating the necessity and cost for testing air hose couplings and nipples per Par. 2 of E-14-1954 and B-70-1955. This calls for gaging and testing reclaimed couplings on a standard testing device. Par. 5 of E-14-1954 requires that the brake pipe hose assembly, including gasket, be tested. Par. 2 of E-14-1954 will be eliminated if the committee does not find sufficient defective couplings to justify additional cost of testing.

AAR Research is now developing a synthetic air hose gasket which will not contract in extremely cold weather, will remain resilient at temperatures as low as minus 40 degrees, and will give normal wear for a three year period. Beaded type coupling gaskets are being subjected to further tests.

A new type single car testing device for passenger cars reported in 1956, which offers a much more restrictive release, is still undergoing tests. Investigation is being made to determine whether an additional gage will be necessary because of more noticeable wear on AB slide valves and slotted ports in slide valve seat, especially in equipment in service for about 25 years. The committee reports that brake pipe and brake cylinder leakage on freight car trains, greatly reduced in the past several years, is now experienced primarily at the angle cock and hose couplings.

In the matter of providing a proper brake beam which would meet Specification 2518 on the basis of 100 psi brake cylinder pressure, the committee feels that the No. 18 beam under most conditions of service will not be stressed to the point where fatigue will result. Consequently, it has been decided for the time being this beam will be considered satisfactory in its present form. The committee recommended the brake beam manufacturers make the pin hole in strut $1\frac{1}{4}$-in. diameter for a $1\frac{17}{32}$-in. pin. They have also been requested to analyze the strut to make sure the increase in diameter of the pin will not impair the brake beam strength.

The effective date for automatic type slack adjusters applied to freight cars, complying with AAR standard specifications and having certificate of approval has been extended to January 1, 1958.

The committee again advises that on cars in interchange service, cast iron shoes must not be substituted for the Cobra shoe or vice-versa, on account of the great difference in coefficient of adhesion characteristics between the two types.

The committee favors authorizing installation of the single disc freight car brake "X" to 100 cars for experimental tests in interchange, provided the car committee approves.

# Interchange Rules Will Be Easier To Use

**AMONG THESE WILL BE SOME OF NEXT YEAR'S MAJOR INTERCHANGE RULE REVISIONS:**

Partial List of Arbitration Committee Recommendations

| RULE | SECTION | ITEM or PARAGRAPH | DESCRIPTION OF CHANGE *(Recommending Committee in Italics)* |
|---|---|---|---|
| 3 | j | 3 | Add "conditionally approved types of types authorized for test application" to lubricator types to be applied to new or rebuilt cars after August 1, 1957. *(Lubrication of Cars and Locomotives)* |
| 3 | f | 1-d | Complete band on Allied Full-Cushion trucks in interchange after January 1, 1959. *(Car Construction)* |
| 3 | f | 3-e | Amend instructions on painting new and secondhand truck side frames to prevent contamination of lubricating oil from paint on inside of boxes. |
| 9 | — | 2, 4, 5, 6, and 8 | Modification of indicated items to eliminate the necessity of recording unnecessary information on billing repair cards. |
| 10 | Complete Revision | | Revision to eliminate unnecessary information on billing repair cars and reduce costs involved in their preparation. This Rule will incorporate those parts of present Rule 98 involving billing. |

*(TABLE CONTINUED ON NEXT PAGE)*

Simplification and elimination of obsolete material in the Interchange Rules are major objectives of a special working committee of the Mechanical Division's Arbitration Committee. This group also has been working since last February at rearranging the code into separate interrelated sections for more convenient reference by groups having specialized interests such as (a) billing offices, (b) yard and interchange inspection forces, and (c) supervisory and write-up men on repair tracks.

This work is the result of action by the AAR Board of Directors to simplify inter-road clerical work. A special group formed in July, 1955, under the chairmanship of H. J. Ward, PRR comptroller, reported that in this field there were "great potentialities for economies."

To date the study has embraced all phases of operations and will be a continuing program until rules are reduced to the most simplified and understandable form, and until the most modern and economical procedures are established for inter-line billing for car repairs. The ultimate

objectives are:

- Segregation of the mechanical from the clerical phases of the code so the mechanical department employee will be able readily to obtain information and instructions governing actual repair operations and to fix the responsibility for making repairs and for unrepaired damage.
- Simplification of the preparation of billing repair cards to expedite pricing in billing offices.
- Reduction of the pricing structure to its simplest possible form to make possible modern machine accounting.

Already the work has produced results which the Arbitration Committee proposes as changes for Rules 9, 10, and 11 (see accompanying table). Rule 9 specifies the information required on billing repair cards to describe material items used for repairs. Unnecessary detail information will be eliminated and the time for recording this can be eliminated and made more productive.

### Simplified Billing

At the present for the removal and replacement of wheels, it is required that inspectors measure and record the diameters and lengths of journals, the diameters of wheels seats, and the diameters of the centers of the axles for the wheel sets applied as well as for those removed. This is done at the car immediately before and after the removal. This consumes time for the inspector, delays repairs, and consumes productive man hours of the car repairmen. This information will be eliminated if the proposed changes are made.

Rule 10 would be expanded to embrace all features relating to the use of billing repair cards for reporting causes of removal, responsibility for repairs and establishing and reporting charges and credits for wheels and axles. This will separate the billing items from the mechanical items in Rule 98.

The new Rule 11 will include all guarantees for wheels and axles. Members of the special committee which is working full-time on this assignment are Chairman E. W. Gebhardt, formerly district supervisor of car maintenance, C&NW; J. P. Svetlecic, formerly car foreman, MP; I. H. Mattern, formerly foreman—car inspectors, Reading; and J. B. Matt, formerly special traveling auditor, Southern.

| RULE | SECTION | ITEM | DESCRIPTION *(continued)* |
|---|---|---|---|
| 11 | New Rule | | This rule will include all information relative to guarantee of repairs from Rules 81, 98 (b-8), (c-3), (Interpretation 8), and Rule 99. |
| 17 | f | — | New section providing for substitution of "conditionally approved" lubricators for each other or for those authorized for limited test applications. |
| 18 | c | 1-a | Removal of limitation on welding couplers in accord with revision of Rule 23. |
| 22 | I | I | Revision and elimination of diagrams because of rapid elimination of freight cars with wood sills in interchange service. |
| 23 | | | Modification to permit use of new developments in welding, to eliminate obsolete material, and to remove unnecessary restrictions. |
| 32 | b | 12 | Modification to permit the owning road to promptly recondition and return to service contaminated cars that can be reconditioned by cleaning. |
| 62 | | | Note pretaining to second-hand air brake hose revised to require that hose must be marked to show inspection has been made. *(Brakes and Brake Equipment)* |
| 63 | | 1, 2 | Consolidation and modification to eliminate differences between top and bottom portion wear limits on brake hangers. |
| 66 | b | 2, 3 | New paragraphs to provide for the repacking of cars equipped with journal lubricators when due for periodic attention. *(General and Lubrication of Cars and Locomotives)* |
| 66-A | k | | Modification to separate greases approved under 1953 specification from those to be approved under 1956 specifications. *(Specification for Materials)* |
| 69 | Complete Revision | | To provide for the proper mounting and mating of various kinds of wheels. |
| 82 | | | Captions under Figures 7 and 8-A revised to conform with similar changes in Wheel and Axle Manual. *(Wheels)* |
| 82 | | | Elimination of symbols for various types of wheel defects because this information will no longer be required on billing repair cards. |
| 93 | | 6 | New paragraph intended to assist car owners in their accounting for maintenance of mechanical refrigeration units in cars. |
| 101 | | | New table and note added to provide reference pertaining to the status of the various types of journal lubricating devices. *(General and Lubrication of Cars and Locomotives)* |
| 105 | | | Interpretations 2, 3 and 7 modified to provide equitable basis for charge for items which are procurable from only one manufacturer. |
| 107 | | 168 | Modification of third note to provide same deduction for cast-steel wheels as for wrot-steel wheels removed when dismounting operation is not performed. |

Other changes not detailed involve Rule 17 (1), Rule 17 (Interpretation 4), Rule 60 (c) and (f), Rule 81, Rule 96, Rule 98, Rule 99, and revision of Billing Repair Card (Wheels and Axles).

# Lubricators Replacing Loose Waste

The transition from loose waste packing and problems accompanying this change-over have consumed much of the time of the Committee on Lubrication of Cars and Locomotives. It has been recommended that the earlier letter ballot action of member roads to require "approved" types of lubricating devices on new and rebuilt cars after August 1, 1957, be modified to require the use of *"conditionally approved types or types authorized for limited test application."*

On the basis of an evaluation scheme developed by the Committee, four lubricators have been "conditionally approved" and sixteen others have been "approved for test." The Committee pointed out that the conditional approval for four does not mean that there are not others which are equal or superior. It only means that those so far not granted this approval have not been installed in sufficient numbers, or have not been installed long enough to evaluate their performance. The chairman added that, "Shortly there will be others."

H. M. Wood, Pennsylvania, discussed the relative merits of the lubricating devices and pointed out that the lubricator which produced the best performance on the Pennsylvania with 1,800,000 miles per hot box was one of the four "conditional" devices while the PRR's second best performer with 1,500,000 miles was one of 16 approved only for test applications. He went on to say that there "will be lubricators for which test approval will be withdrawn."

The Committee's new rating scheme requires that lubricators produce a hot box record "three times better than is experienced with journal box packing." The record of waste-packed cars at the present hot box rate was calculated to be 315 set-outs per 54,000 car months. The Committee then requires that the lubricating device record would not exceed 105 set-outs in 54,000 car months. Also a minimum of 18 months service must be accumulated with the lubricator before approval can be granted.

During the discussion, the question of "conditionally approved" lubricators which have been completely redesigned within the past 18 months was raised. A. J. Schulte, Chairman, explained that the original designs had fulfilled all the requirements, and the new designs had outperformed the originals in the laboratory and consequently were granted the "conditional" approval.

The Lubrication Committee has issued instructions for handling cars with journal lubricating devices due for periodic lubrication attention under Interchange Rule 66. The instructions require removal, inspection, and placing "in as good condition as is consistent" before reapplication. It was pointed out that railroads and suppliers were successfully cleaning the devices, and the Santa Fe and Northern Pacific activities were cited specifically. During the past year, the following lubricators were granted approval for limited application: Cardwell-Westinghouse Journal Lubricator, Hennessy Lube-Pad, Acme Lubricator, and Spring-Pak Lubricator.

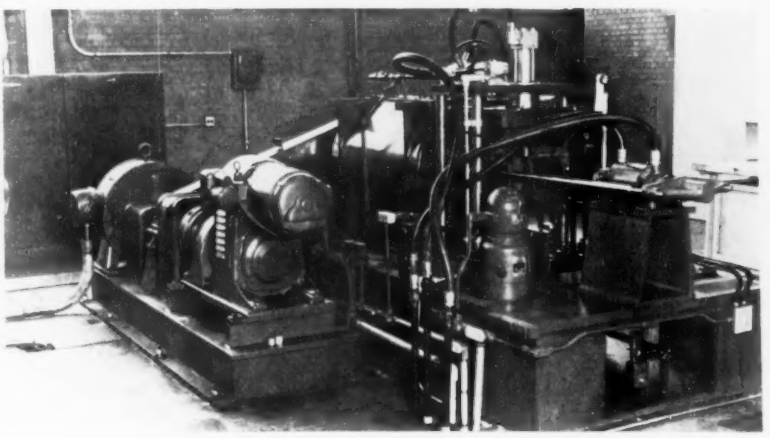
"Manufacturers should reevaluate their lubricators if there is no oil reservoir in the device," H. M. Wood warned. He discussed the oil consumption of the various types and said that the Pennsylvania has started a test with both lubricator-equipped and waste-packed cars to find the proper amount of free oil for each type. "Oilers may put too much oil in lubricators," he observed. The Pennsylvania has an average performance of 639,758 miles per hot box with lubricator cars and 203,019 miles for waste-packed cars. Since about 70 percent of the PRR hot boxes are on foreign cars, it is difficult to correct the situation, according to the Pennsy's assistant chief of motive power. A. J. Schulte completed the Committee presentation by saying that the group is "still not satisfied . . . we want a better lubricator."

## Oil Seals Important

With three years of investigation, and with controlled tests on the Pennsylvania and Great Northern, the Committee has determined that the use of the present wood dust guards produces "no clear cut advantage," and that efforts should be devoted to development of an efficient and reasonably priced rear oil seal. The Committee has granted authority for tests of limited number of the following seals: Empire (1956 report), Guard Seal (developed on the B&O), Turco, and Dust Guard Oil Seal (Hennesy). A seal designed by the AAR laboratory (1956 report) is now being commercially produced and is soon to be installed on Santa Fe and Norfolk & Western cars. Solutions for the loss of oil from lubricators would be both improved dust guards and journal stops according to H. M. Wood, Pennsylvania.

The Lubrication Committee's continued study of test applications of "RS" journal stops was reported to the meeting. Journal bearings and journal stops on a Frisco ballast car have operated for 64 months with the journal stops, journal bearings, and wedges still in "good" condition. One truck of each several test cars was equipped with journal stops and the other retained the standard journal box arrangement. The "standard" end of each car has had bearings with spread linings, and several have had to be replaced, while all brasses operating in conjunction with journal stops could be continued in service. Said the

AAR journal testing machine has worked steadily on lubricator approval



AAR-designed rear seal will be road tested.

Committee, "The mileage on the B-end bearings was quite small as compared to the mileage on the A-end bearings and this indicates the extended bearing life that can be obtained by use of RS Journal Stops . . . Your committee feels that there is much benefit to be derived from the use of RS Journal Stops in prolonging the service life of journal bearings and in helping to prevent hot boxes."

A Pennsylvania spokesman took exception with some claims which have been made for the journal stop. Tests on forty 70-ton hoppers on the PRR produced results which "indicate considerable merit," but are at some variance with Frisco findings. The Pennsy did find less end wear on bearings, 85 percent of the dust guards were undamaged as compared to 15 percent on "standard" cars, and the packing was cleaner. The conclusion drawn by the PRR representative: "A journal stop reasonably priced will help solve the hot box problem." J. F. Ryan, Frisco, commented that his road's experience is with "sufficient cars that it is beyond the test stage." By the end of 1957, the SLSF will have 5,650 cars with stops. Work has been done with journal stops cast in aluminum instead of bronze.

## Conventional Bearings

The present standard journal bearing and wedge are being subjected to concentrated investigation. No further work is being done on ventilated journal bearings or with the flat-back bearing. At present, laboratory work is to be continued on an aluminum journal bearing lined with AAR babbit, although work done so far did not justify road tests. First models tested by the research center showed the lug surfaces developing high rates of wear, and also showed the bond between lining and back was not as strong as that of the conventional bearing.

Road tests are continuing on bearings lined with Satco metal instead of babbit. The Committee has authorized the Baltimore & Ohio to equip 100 interchange cars with the "Rymul" design of bearing which is ¼-in. longer than the present standard and has oil grooves on the bearing surface. The design is intended to retain oil now squeezed out under the dust guard seat and under the collar.

The AAR itself is investigating the use of a ¼-in. longer journal bearing. This would be a return to the design standard prior to World War II when the bearing was shortened to conserve critical materials. Said the committee, "The lateral clearance of the [present] bearing on the journal is felt to be undesirably long and the extra lateral clearance permitted by the shorter bearing in addition to the lateral produced by wear of the various parts in the journal box assembly is recognized as an item which should be improved." The longer bearings will be tested with the lugs moved inboard and outboard ⅛-in., and the present shorter bearings will be tested with lugs moved inboard and outboard ⅛ and ¼-in.

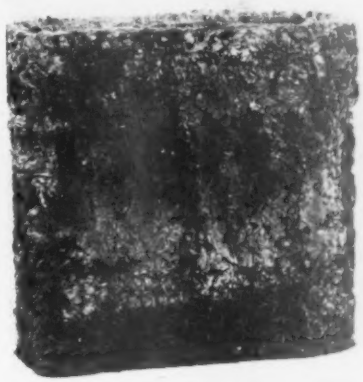
The committee is investigating the crown of the conventional journal box wedge to see if decreasing the crown radius from the standard 78-in. to either 50-in. or 60-in. would produce a better load distribution on the journal's oil film. Cars are already equipped with these bearings and are in service, although no conclusions have yet been drawn from the tests. Along with this investigation, the Committee has decided "that the condemning limit on journal bearing wedges is not severe enough and that many hot boxes occur because of flat wedges which cause concentration of load on one portion of the journal." This has led to a recommendation for a Lubrication Manual change which would reduce by 1-in. the length of permissible flat surface on top of the wedge.

The Committee recommendations on a specification for roller bearing grease were accepted by letter ballot during the past year and tests under this specification are already underway. This is an 8-week simulated road test in a laboratory replacing the road test previously required and found to consume an undue amount of time. During the year the Committee found it necessary to discourage the use of molybdenum disulfide as a journal oil additive because it clogs the fibers of lubricators and packing. Laboratory work on journal oil characteristics at O-deg has led to the preparation of a specification for oil at this temperature which may finally be included in the car oil specification. Work has been done on extending the repack date for waste-packed cars from the present 18 months. In conjunction with this the Committee has recommended that the Wheel and Axle Manual be modified to provide that the end face of the axle be smoothed along with the collar so that it cannot cut up the packing which it contacts. Said the report, "This request is being made because of extensive packing damage being noted due to rough end face and end collars of axles."

## Cartridge Bearings

Three different designs of cartridge type journal bearing assemblies have been approved for limited application to cars in interchange service. Shortly the secretary of the division will issue information on the application and design of these units. Member roads were urged to inspect the oil levels in these bearings and were warned that they are similar in appearance to the package roller bearing assemblies. The manufacturers of the three types have been asked to prepare a joint instruction on the re-lubrication periods so that one single period can be applied to all three types. The three types of cartridge bearings approved were the Plain Sleeve Cartridge Bearing Unit of Cleveland Graphite Bronze Co., the Cartridge Bearing Unit of the National Bearing Division of American Brake Shoe, and the Allison Kar-Go Journal Bearing of the Allison Division of General Motors.

Moly disulfide clogs fibers of lubricators.



# High Loads Would Get Special Handling

An Interchange Rule revision which would require special handling for any loaded car with a center of gravity over 84-in. has been recommended by the Committee on Car Construction. At the same time it has been recommended that after January 1, 1958, rebuilt and repainted cars have the proper AAR mechanical designation stencilled on the sides of cars "on the same line and directly to the right of capacity markings on car in 3-inch letters." This would be in addition to the owner's own designations which are applied in line with the car's construction date.

Last year member roads agreed to a revision which requires that no part of a car shall be less than 2-3/4-in. above the running rails. This has been amplified this year with a recommendation that the rule be revised to require that cars with multiple-wear wheels worn close to the condemning limits should have new wheels, bearings or wedges installed to maintain this clearance. The aim is to keep clear of retarders and other equipment along tracks, and G. P. McGavock, Norfolk & Western, emphasized that this is both a maintenance and design problem. Work is continuing with the AAR Engineering Division to fix standards for clearance of those portions of cars between the two truck centers (such parts as hopper doors, undercar heaters, and refrigerator car fuel tanks). A revision has been recommended which will require that permanently fire-proofed insulating materials be used in refrigerator cars, and another to permit methyl alcohol refrigerator car heaters to be operated with thermostats set at up to 70-deg.

The Committee has approved the "Schnabel" design of two-piece transformer car (Railway Locomotives and Cars, April, 1957, p 76), and it was announced that this unit is known

## Pro's and Con's of Standardizing Piggy-Back Tie Downs

**(Summary of Continuing Study by Committee on Car Construction)**

• **PROPOSAL:** Cars to be designed for end loading only.
**Comment:** Plans and designs are being actively progressed to develop cars suitable for side and end loading. Methods of loading should be left open.

• **PROPOSAL:** Height from top of rail to top of deck should be 3-ft 6-in. and should not exceed 3-ft 10-in.
**Comment:** A car with floor height of 2-ft 5-in. minimum is desirable. Present General Motors and proposed Pullman-Standard cars have floor height of 2-ft 7-in. A minimum height of 3-ft 6-in. would impose restrictions on Eastern railroads handling 12-ft 6-in. trailers through some tunnels.

• **PROPOSAL:** One apron to be provided at each end of car. Minimum width to be 30-in. and aprons to be located at AL and BL corners. Minimum length of apron to be 4-ft.
**Comment:** Minimum length of 4-ft should not be specified because of use of short cars for long trailers and because of use of two cars coupled with permanent drawbars. Both of these may require shorter aprons for satisfactory operation.

• **PROPOSAL:** Minimum number of tie-downs to be four per trailer. Minimum size of cable ½ or ¾-in. alloy chain made from a special analysis, high-test steel with good resistance to impact loads. Minimum safe working load 16,200 lbs per securement.
**Comment:** There is no objection to the use of chains, but provisions should be made in this item to cover designs where securement is obtained without the use of chains or cables.

• **PROPOSAL:** End of tie-down cable or chain that attaches to trailer must be equipped with hook or eye.
**Comment:** There appears to be agreement on this subject.

• **PROPOSAL:** Trailers must be equipped with eight open hooks. Four of these hooks shall be on each end of trailer, not more than 42-in. from the end of trailer.
**Comment:** Making applications of open hooks on trailers mandatory is not concurred in. Many trailers are now being handled which do not have such attachments. One system is to use a self-locking beam at the fifth wheel with chains attached to the beam. At the rear of the trailer safety chains are passed over trailer underframe members or bumper. It is not desired that railroads and common carriers be burdened by requiring attachments on trailers. Some users say that hooks are not satisfactory and ask for consideration of D rings, eyes, or open links.

• **PROPOSAL:** One standee shall be used at front end of trailer. Standee must be removable or hinged and preferably attached to the car floor. Minimum height above car floor 40-in. and maximum 44-in.
**Comment:** While no objection is made to the use of a standee or stanchion, consideration must be given to the use of jacks and jacking beams. Reference should be made to a retractable hitch, in which case a minimum height should not be specified.

• **PROPOSAL:** Minimum width of guide rails shall be 8-ft 4-in.
**Comment:** One large operator of piggy-back service after considerable testing has found that 8-ft 2-in. is the optimum minimum width.

• **PROPOSAL:** No part of the car or attachments between the tires of vehicles shall project more than 8-in. above top of the deck.

• **PROPOSAL:** A clear space 8-in. wide for the full width of car must be provided across the ends of the car.
**Comment:** Clear space of 8-in. does not conform with present dimension in Loading Rules which specifies 12-in. minimum at hand brake end of the car.

• **PROPOSAL:** Chock blocks must be used and should be movable and adjustable.
**Comment:** As the design and development of the stanchion at the trailer fifth wheel location is being progressed to the point where it has sufficient capacity to hold the trailer on the car, the use of chocks is not required. In fact, they should not be used because of the built-in shock absorbers which require certain freedom of trailer movement on the car floor to be effective.

• **PROPOSAL:** Tie-downs, where attached to the car, may be stationary or movable.
**Comment:** There appears to be agreement on this item.

• **PROPOSAL:** Loaded trailers on cars must meet AAR clearances.

• **PROPOSAL:** All trailers must be equipped with a king pin because many railroads are adopting king-pin tie-down devices.

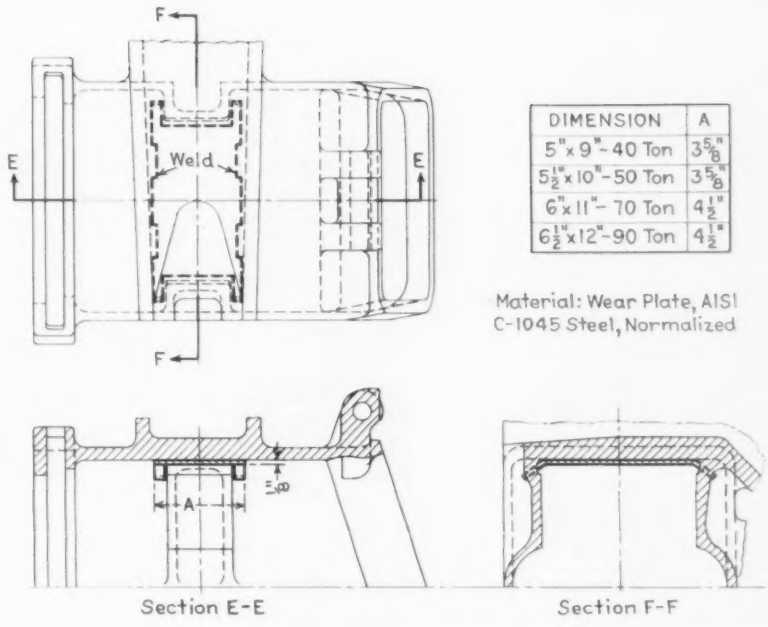
as a transformer transportation car. It was built by Greenville Steel Car and the Pittsburgh Des Moines Steel for Westinghouse Electric and has just gone into service.

Action taken last year by member roads to require the use of 2-3/8-in. lumber for box car flooring has been revised because some roads cannot economically obtain lumber heavier than 2-1/4-in. The previous action also had required three floor stringers on each side of the center sill and the Committee stated that with this support they could recommend the 2-1/4-in. material.

Considerable work has been done on standardizing the tie-down arrangements used for piggy-back service, but there has not been enough agreement to prepare a specification (see table).

The Committee is establishing the location for retainer valves on flat cars, and has established definitions and designations for cars now to be known as XMC and RBL types. The Standard Truck Manufacturers' Engineering Committee has submitted designs for liners to be applied to the tops of journal boxes of new side frames. The design chosen and submitted for letter ballot action is a ⅛-in. wear plate which is to be forced into contact with the roof of the box and welded in that position.

(AAR Reports Concluded on p 64)




| DIMENSION | A |
|---|---|
| 5"x 9"-40 Ton | 3⅝" |
| 5½"x 10"-50 Ton | 3⅝" |
| 6"x 11"- 70 Ton | 4½" |
| 6½"x12"-90 Ton | 4½" |

Material: Wear Plate, AISI C-1045 Steel, Normalized

Liner for journal box roof would be applied to new side frames.

# CPR Keeps 'Canadians' on the Road

(*Continued from page 39*)
at a particular location. The proper color and type of material will be cut and ready for application to the car when it arrives. A similar arrangement is used for replacing broken windows and broken glass in lighting fixtures. Supplied to all points which do any work on the stainless cars are the copies of the three types of data sheets—thermo-sash analysis, electrical fixture analysis, and interior decoration analysis.

### Coast-to-Coast Reports

Because maintenance and repairs may be performed at points nearly 2,900 miles apart (Vancouver and Montreal), it is necessary to have standardized reports and procedures to make the preventive maintenance program successful. There are a series of forms detailing each item to be inspected, replaced or overhauled during each of the mileage maintenance periods. There are separate forms for the 120,000-; 240,000-; 360,000-; 480,000-; 600,000- and 720,000-mile inspection periods. These forms are sent out by the office of the chief of motive power and rolling stock. When completed, they are returned by the terminal to show the work has been finished. The items covered on each of these forms is summarized in the accompanying table. This table covers the entire scheduled passenger car preventive maintenance program as it is now operated on the Canadian Pacific. However, schedules can be revised as the accumulated mileages of cars increase.

Terminal reports supplying the information for keeping the Kardex records up-to-date and for posting the wheel record books include "Monthly Wheel Scrapping Record," "Monthly Wheel Removal Record," and "Monthly Component Replacement Report." Further information on road troubles which may indicate necessary changes in maintenance procedure comes from a record of repairs made for failures which did not involve replacement of components. This repair record is submitted not only by the three main terminals, but by all of the intermediate division points which may have had to work on any of these stainless-steel cars.

Manufacturers' and builders' recommendations were combined with the Canadian Pacific's experiences to establish the original preventive maintenance program. Since the cars have been in service, the failures and wear records have led to revisions in the scheduling. Some items operate successfully for periods longer than originally anticipated, and some have had to be inspected more frequently than was expected. Changes in scheduling and information brought out with the complete records kept on this fleet will be discussed in the next installment—"CPR Knows What Today's Equipment Will Do."

As one of the CPR officers recently put it, "The success of the operation has been dependent on the cooperation of the maintenance staff in reporting all the car work with the part serial numbers. This is second only in importance to the accumulation of accurate mileages."

Erie Mining Company's $300 million-plus taconite project, said to be the largest single iron-ore mining venture in history.

# AC Brakes Are Being Tested on Taconite Mining Railroad

During July, evaluation tests of Westinghouse Air Brake's AC valve have been underway on Erie Mining Company's 73-mile railroad in northern Minnesota. The AC valve is being tested in conjunction with the pressure maintaining feature of the locomotive brake valve. The cars are equipped with Railroad Friction Product's Cobra composition brake shoes. Among the locations chosen for the tests is a 7.5 mile stretch of 2 percent grade leading down to Lake Superior at Taconite Harbor.

The tests have two purposes: to provide operational data on brake equipment, and to give Erie Mining railroaders some standards by which to operate their new property.

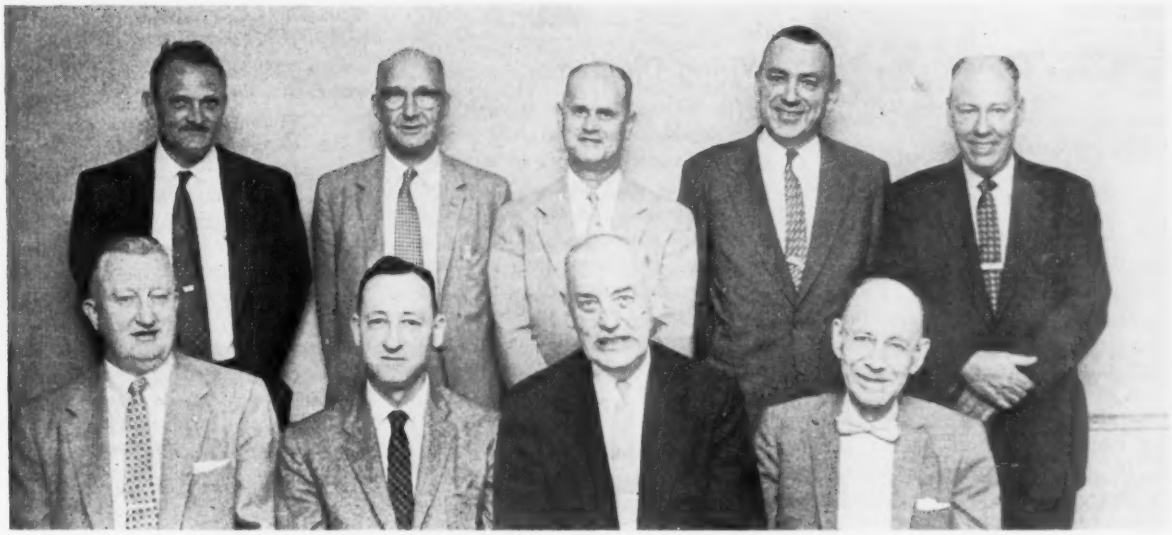
Trial runs will be made with 150-car trains, each powered by five EMD F-9 units. The gross weight of each car will be 251,000 lbs. The AC valve and the pressure maintaining feature does away with the use of retainer valves by making up brake-pipe leakage and permitting a given brake-pipe reduction to be held constant for a considerable period. Westinghouse believes the AC valve allows quicker release of brakes with less sticking and facilitates release at slow train speed. Tests indicate that brakes on rear car of a 150-car train will begin to release nine seconds after the brakes on the first car, as compared with about 50 seconds with the AB valve.

Advantages claimed for the AC valve by Westinghouse are its diaphragm and spool valves which do away with slide valves and ring-packed pistons and are expected to produce savings with lower maintenance requirements. The AC valve's removable portions are about 40 percent lighter. Erie Mining's railroad has the largest installation to date of the AC valve with 500 sets in service. The Great Northern has 50 cars equipped, and the Rock Island's 50 Convert-a-Frate cars are also equipped. ACF Industries is currently installing them on 500 ore cars for the Duluth, Missabe & Iron Range. The AC valve has not been accepted for interchange by the AAR. The Committee on Brakes & Brake Equipment of the Mechanical Division is going to follow the performance of the Great Northern cars.

The Erie Mining railroad runs from a taconite pellet-producing plant at Hoyt Lakes, Minn., 73 miles to a dock at Taconite Harbor on Lake Superior. Operation now is confined to needs of construction facilities. When taconite production gets into full swing, the railroad will haul the plant's total output of 7½ million tons of pellets to docks a year. The pellets will be almost two-thirds iron. Actual full scale operations at the plant are expected to begin this fall after the Great Lakes shipping season closes. The pellets will be stock-piled through the winter and begin moving in 96-car, 12,700 ton trains in the spring. The trains will be unloaded without uncoupling. The bottom-dump hoppers will be dumped into a 1200-ft concrete hopper beneath the track atop the dock. Twenty-five Link Belt conveyors will empty the hopper pockets into the hold of ship.

Present equipment for operation of the railroad consists of 389 pellet cars, 30 diesel locomotives, 5 cabooses, 4 diesel fuel tank cars of 22,000 gallon capacity and 4 or 5 work cars made from old Pullman sleepers.

RAILWAY LOCOMOTIVES AND CARS



Members of the Committee of Direction attending the meeting held on Monday, June 24, 1957. From left to right, they are: (top row) R. I. Fort, IC, D. M. Burckett, B&M, H. P. Wright, B&O, J. L. Christen, Pullman Co., R. F. Dougherty, UP; (bottom row) C. C. Elber, Secretary, Electrical Section, C. R. Bland, C&O, S. B. Pennell, NYC, and K. H. Gordon, PRR. Other members of the Committee are J. J. Schmidt, D&RGW, and P. B. Burley, IC.

# Section Holds 8th Co-ordinated Meeting

*The work which has been done by the Electrical Section has insured its right to continued freedom of action and usefulness to the railroad industry*

IN OPENING THE 1957 MEETING of the Electrical Section, Engineering and Mechanical Divisions, AAR, Chairman Pennell called attention to the rapid growth of the organization. The first joint meeting of the Mechanical and Electrical Sections was held in 1950 at which time both sections voted to consolidate. The consolidation was officially approved in 1951, and became effective January 1, 1952.

This year the section has appointed 33 new committee members, 6 new consulting members and 6 new affiliate members. Attendance at general meetings has greatly increased, and the association shows every sign of healthy growth.

Chairman S. B. Pennell opens 1957 meeting.

C. R. Bland, assistant electrical engineer—rolling stock, C&O, elected Chairman, Electrical Section, 1957-58.

### Election of Officers

New officers elected were as follows:

CHAIRMAN: C. R. Bland, assist-

ant electrical engineer — rolling stock, Chesapeake & Ohio.

VICE CHAIRMAN: H. P. Wright, electrical engineer, Baltimore & Ohio.

C. C. Elber, secretary Electrical Section.

COMMITTEE OF DIRECTION: S. V. Smith, assistant electrical engineer, Pennsylvania, and R. H. Russell, electrical engineer, Great Northern. Members of the Committee of Direction who have completed their term of office are R. F. Dougherty, general electrical and air conditioning inspector, Union Pacific, and K. H. Gordon, assistant electrical engineer, Pennsylvania.

In presenting the report of the Committee of Direction, C. R. Bland announced that the 1958 meeting of the Electrical Section would be held in Chicago with exhibits, and the 1959 meeting would be held in Atlantic City, N. J., also with exhibits.

N. D. Howard prophesies bright future for Section.

N. D. Howard, Secretary, Engineering Division, AAR, was asked by the chairman to take the floor. He referred to the fact that there had been some misgivings at the time the two Electrical Sections joined forces. It was feared that they would be dominated and absorbed by the two Divisions. Mr. Howard said he never doubted the success of the single Section and called attention to its continued freedom of action and increasing usefulness. He added that no action has been taken by the Divisions to change, in any way, the status of the Electrical Section.

C. W. Martin tells of progress made in standardizing diagrams.

## Wiring Diagrams

The Committee on Wiring Diagrams continues with the slow, meticulous and necessary work of standardizing wiring diagrams and markings for rolling stock. In this report, it is concerned with wire markings for schematic and connection diagrams, and it recommends that the specifications offered in the report be submitted to letter ballot for inclusion in the manual.

### Discussion

The report was presented by C. W. Martin (B&O). Discussion was concerned with the advisability of having a communications circuit on cabooses separate from the lighting circuits. As a result an amendment will be sent out to letter ballot which will recommend that a separate circuit, to be designated *CW*, for communications circuits will be added to the caboose wiring diagram.

W. W. Atkinson's committee is responsible for matching the battery to the locomotive.

## Automotive and Electric Rolling Stock

In collaboration with Committee No. 1, the Committee on Automotive and Electric Rolling Stock has rewritten Part 5 of the Manual on Control Equipment concerning the auxiliary power system. This deals with storage batteries.

Announcement is made that one of the leading manufacturers of diesel-electric locomotive batteries will furnish new batteries with hinged vent plugs in the near future at no extra cost.

Diagrams in the report show recommended dimensions and contact identification for 27-point control plugs and receptacles for diesel-electric locomotives.

Typical procedures and power testing, sequence testing and automatic transition testing are included in the report for EMD, Alco, Alco-GE and Baldwin-Lima-Hamilton locomotives.

Concerning the mounting height of receptacles, the report makes the following suggestions:

On hood-type locomotives, each end that is equipped for mutiple-unit operation shall have one 27-point control receptacle located as follows:

| | |
|---|---|
| Top of rail to centerline of receptacle | 60 in. min.<br>76 in. max. |
| Centerline of locomotive to centerline of receptacle (measured to right of locomotive centerline when facing coupler) | 16 in. min.<br>21 in. max. |

Dynamic brake field loop receptacles, if used, shall be located within the same limiting dimensions specified for the control receptacles.

From information gathered by the Committee's railroad and builder's representatives, the following has been established as the recommended location for 27-point control and dynamic brake field loop receptacles at the cab end of car body "A" units:

| | |
|---|---|
| Top of rail to centerline of receptacle | 108 in. min.<br>120 in. max. |
| Centerline of locomotive to centerline of receptacle (measured to left of locomotive centerline when facing coupler) | 18 in. min.<br>24 in. max. |

The dimensions pertaining to car-body units are given as information only.

### Discussion

The report was presented by W. W. Atkinson, (UP). Asked what manufacturer had produced the hinged plug referred to in the report, Mr. Atkinson replied that it was made by the Gould-National Batteries, Inc. and that the opening is a little less than ¾ in. Reference was also made to a device being produced by another manufacturer which would

Chairman S. B. Pennell receives medal from past-Chairman K. H. Gordon.

prevent overfilling of a battery when water is added. It was suggested that tolerances be specified for plug and receptacles pictured in the report and Mr. Atkinson replied that the report intended to include only enough for general specifications and was not intended to restrict the designers too rigidly.

C. R. Wadham tells how to fill fuel tanks without excessive loss of fuel oil.

## Motors and Controls

The report of the Committee on Motors and Controls describes a means of mitigating excessive loss of fuel oil when filling diesel locomotives. This was developed by the Illinois Central and installed at 27th Street in Chicago. So as not to disturb the normal fueling of diesels, a separate stand pipe was installed at this location to be used exclusively for fueling the diesel having the special float equipment mounted on it.

A special float was installed in the fuel tank of the diesel. This float has a mercury tube circuit breaker. The circuit from this breaker was brought out to both sides of the locomotive into a Pyle National BRB-12 receptacle. The circuit is closed. When the fuel oil is at the desired level, the circuit is opened.

A solenoid operated valve, 110-volt, 60-cycle, was installed in the supply line on top of the stand pipe. On the stand pipe are also mounted a signal light, service entrance switch, transformer relay, special short circuiting receptacle for the control plug and an idle receptacle to hold the cord plug when not in use. There is also a main shut-off valve at the bottom of the stand pipe.

### Discussion

In presenting the report, C. R. Wadham, (IC), said the Illinois Central now has two *A* and two *B* locomotive units, equipped with the fuel transfer control described in the report, and that there are two fueling stations equipped on northbound tracks and two on southbound tracks. He added that it is important to have the tracks level at fueling points, particularly because the control is over one rail, and not on the centerline of the locomotive. Cost of an installation on a locomotive was estimated at $105.00 to $120.00, and of a fueling station at about $200.00.

## Repair Shops

On the subject of high potential testing of insulation, a section of the report of the Committee on Repair Shops reads as follows:

Standard a-c high potential tests have long been used and accepted by the industry as proof tests to verify the adequacy of the insulation. This type of test makes no compromise and provides no means of evaluating the condition of the insulation. It is simply a proof test of the insulation at a predetermined voltage level.

Direct-current testing offers a number of inherent advantages, which are particularly useful to maintenance and repair shop testing of diesel-electric motors and generators. First, it may be used to analyze the condition of the winding and to determine corrective action required. Second, it may be used to anticipate imminent failure. Third, it may provide useful information concerning the predicted service life of the windings.

Other advantages of d-c high potential testing are:

1. The test is essentially non-destructive to insulation and permits impressing voltages approaching the breakdown point without damage to the insulation.

2. Repeated tests with d-c potential may be made without damage to the insulation.

3. The test equipment is relatively small, compact, and lightweight and may be transported easily.

P. O. Lautz said "We are trying to determine the condition of equipment without destroying it."

The report then outlines proposed methods of d-c high potential testing and outlines methods of determining what the test results indicate should be done to the apparatus being tested.

In previous reports, the committee has prepared specifications for various types of cleaning agents. In this report they have specifications for four more. These are (1) A hot tank cleaner for aluminum parts; (2) An alkaline steam cleaner; (3) A cold tank cleaner; and (4) a scale removing cleaner.

A chapter of the report deals with ultrasonic cleaning. It describes the remarkable effectiveness of this type of cleaning, but adds that some experiments on committee member's railroad have indicated that, in the present state of development, this equipment is not fully satisfactory for the removal of heavy type soils normally encountered in railroad practice. Since the removed soil remains in suspension, ultrasonic cleaning is best adapted to the final stage of cleaning.

The report is concluded with a bibliograph of selected articles from 1956 periodicals, proceedings and reports on diesel-electric locomotive repair shops.

### Discussion

The report of the Committee on Repair Shops was presented by P.O. Lautz, (AT&SF). Asked what equipment was included in the testing procedure outlined in the report, Mr. Lautz said it includes all rewound equpiment, rated 600 volts and that it could include non-rotating equipment. He added that the report was offered as information. "Our primary purpose," he said, "is to find a means of testing which will determine the

condition of equipment without destroying it." "Careful analysis," he said, "is needed."

A. L. Davis, (GE Company) said that GE experience with d-c testing has been quite favorable so far and added that electrical noise at the knee of the voltage curve seems to provide a good warning against overstressing of insulation.

H. P. Wright, (B&O), said that one railroad has been using d-c testing for 10 years. He described the method as an old tool that needs further development. In response to a question concerning how many roads are using d-c testing, there were a number of replies as follows: "We still use a-c in the shops but have bought nothing recently but d-c testers." "We use d-c in preference to a-c." "D-c is used in the roundhouses and a-c in the shops." "A-c is used to cause burnouts and disclose trouble spots." "We are developing others for finer measurements."

Following a general discussion on voltage limitations, Mr. Lautz said it is an engineering matter to determine where voltage should be stopped without taking unnecessary risks.

It was suggested that the welding report presented by M. A. Herzog should be Manual material.

## Welding and Cutting

The report of the Committee on Welding and Cutting describes practical methods of reclaiming traction motor suspension bearing dust guards, eddy current clutch housings and the metallizing of the outside diameter of Baldwin - Lima - Hamilton cylinder liners. It also includes a report on coupler and yoke reclamation on a production basis.

A sub-committee consisting of the chairman and three committee members met with a special committee appointed by the AAR to review, revise where necessary, and in general bring Rule 23 of the Interchange rules up to date. It is anticipated that the proposed changes in Rule 23 will enable the railroads to achieve notably larger savings in reclamation work.

### Discussion

The Report was presented by M. A. Herzog, (StLSF). In response to a question, he said the cost of reclaiming a coupler was $25.00 as compared with a new cost of $40.00. Larger savings, he said, may be effected if the operation is made larger. P. O. Lautz, (SF) suggested that the report is so complete that it should be considered for inclusion in the Manual.

C. R. Bland outlines the difficulties involved in testing filters.

## Air Conditioning And Refrigeration

Methods of procedure have been developed by the Committee for a railroad shop test for thermostats, and a standard form of check-off card has been prepared for inspection of air conditioning apparatus. These are offered for inclusion in the Manual.

The report describes three types of temperature sensing equipment, one employing a magnetic amplifier, a second utilizing an electronic amplifier, and a third which is mechanically operated. It also covers in some detail the heating systems of the New York Central's Train-X, built by Pullman-Standard Car Manufacturing Company, the New Haven's Flying Cloud, built by the Budd Company, the New Haven's Talgo Train, built by ACF Industries and the Pennsylvania's Tubular Train built by the Budd Company. All of these have been described briefly in *Railway Locomotives and Cars*.

The report also describes a reverse-cycle heating and cooling system now being developed by the York Corporation. With this system, cooling is obtained in the summer by the coolant absorbing heat from the car air and rejecting this heat to the Freon in the cooler after which the heat is rejected to the outside air in the condenser. In the winter, the reverse cycle obtains whereby heat from the outside air is brought into the car. With this arrangement, the heat gain is more than twice that obtained from direct electric heat due to the heat of compression plus heat absorbed from the outside air. The use of the two stage compressor with intercooling is also desirable because of its much higher efficiency.

An investigation made to develop a performance specification and standard method for testing viscous impingement type air filters used on passenger cars, resulted in the conclusion that there is little hope of developing a suitable standard method of testing filters until the various interested research teams and manufacturers are able to come to an agreement as to what constitutes proper test dust, methods of feeding dust, type of adhesive, etc.

Concerning the use of permanently lubricated, sealed bearings on air conditioning equipment, the report states that a sealed bearing cannot be substituted for an open bearing in every case. The chief criterion seems to be the ambient temperature of the equipment with added hazards of dust, grit, water and snow. Shelf life of sealed bearings is also another factor. It is felt that cooperation between the bearing specialist, the equipment manufacturer and the railroad will result in the successful application of sealed bearings.

A specification for 10-gal air-cooled electro-mechanical drinking water coolers for stationary structures is offered for insertion in the manual.

### Discussion

The report was presented by C. R. Bland, (C&O). Discussion was concerned largely with the fact that the filter manufacturers were unable to agree on methods of testing air filters for locomotives. It was suggested that railroads do their own testing, but agreed that even though they do, specific tests would not cover the needs of all railroads and quite probably even all the requirements of a single road. The quest for effective testing means will be continued.

Asked to differentiate between high- and low-speed compressors, J. L. Christen, Pullman Company, said that those operating at speeds of 750 to 2,200 rpm are considered as high-speed compressors.

Discussion concerning specifications

for water coolers disclosed a difference of opinion. The report includes a specification for a 10-gal cooler. It was pointed out that under high ambient temperatures, the capacity of any cooler is reduced. One group felt that specifications for coolers of other capacities should be included in the report. The other felt that it would be better, for the sake of standardization, to include only one specification and to use more than one unit when necessary.

H. C. Cross lists some potentials of quartz lamp heating.

## Electric Heating

The first portion of the report of the Committee on Electric Heating consists of specifications for tubular hairpin type electric heaters for track switches and their installation, and specifications for plate-type electric heaters for track switches and their application.

The Committee also reports on T-3 quartz infrared lamps in railroad service. It states that the T-3 quartz infrared lamp is a gas-filled lamp utilizing a coiled tungsten filament similar to that in a standard infrared lamp. The major difference between a standard infrared lamp and the T-3 is the extremely high energy concentration possible with the T-3. The minimum size and maximum ratings of ordinary glass bulbs are limited by the temperature that glass will stand. The softening point of glass ranges from 840 to 1,000 deg F. The softening point of quartz is 3,000 deg F. It is this property of quartz that makes it possible to enclose a tungsten filament in a tube only ⅜ inch in outside diameter and to operate the lamp at extremely high ambient air temperatures.

Lamps are available in sizes ranging from 500 to 5,000 watts. There are two applications of this lamp already in use on railroads and other industries. One of these is in a copy machine for office use. The tubular quartz lamp in an elliptical reflector in this machine provides a concentrated band of energy directed to the surface of a temperature-sensitive paper. A sheet of this paper is placed over the piece to be copied and both are moved on a belt to the exposure position. Dark areas of the original absorb the radiant energy and conduct it to the chemically-treated paper, which turns dark in the same pattern as the original.

The other application, which has very important uses on railroads, is a portable infrared oven. This oven contains twelve 1,000-watt quartz infrared lamps with 6 switches to control the amount of energy produced. This oven can be used very effectively to heat large pinion gears, bearing races, couplings and other machine parts to be shrink-fitted on to mating shafts.

Other possible applications are drying paint, defrosting the inside of refrigerator cars, heating small remote buildings, and portable radiant heaters to warm workmen in outdoor car repair areas.

### Discussion

The report was presented by H. C. Cross, (B&O). A discussion on switch heaters was primarily concerned with difficulties involved in keeping heaters secured to the rail.

One member wished to know if quartz lamps may be used for removing, as well as applying, motor pinions. Discussion indicated that it is possible to use them for removal, as well as application, but that they are not as good as induction heaters for removal because the heating time is longer, and the heat is apt to soak into the shaft.

## Power Supply

Due to the constantly increased capacities of utility power networks, railroad customers of power must constantly increase the size and cost of their protective equipment. The cost of indoor enclosures is appreciably lower than that of outdoor installations, and the report of the Committee on Power Supply suggests that indoor equipment be used because of its lower cost and because of easier maintenance.

Concerning recent developments, the report states:

The power packaged transformer units are available in all ranges from 45 through 3,000 kilovolt amperes,—primary voltage 2.4 kilovolts through 14.4 kilovolts; secondary 120/208 volts through 600 volts. This unit consists of primary disconnect, transformer, with throat connection, and in most cases, with secondary air breaker or breakers as needed, all in one enclosure. Its primary advantage is its simple and compact unit construction, which speeds installation and eliminates dirt and foreign matter from the enclosures.

R. C. Welsh, Jr. reports on changing sub-station requirements.

Indoor or outdoor unit substations consist essentially of one or more transformers mechanically and electrically connected and coordinated to perform the best functions for the system.

Low voltage air circuit breakers are now available in draw-out metal enclosures in either indoor or outdoor units. They are rated through 6,000 amperes continuous duty, 240 through 600 volts a-c, 250 volts d-c, and 15,000 through 150,000 amp interrupting capacity.

In a previous article, we had a report on high capacity fuses. One of the manufacturers now incorporates low voltage air breakers and high capacity fuses in one unit and calls it a Current Limiting Circuit Breaker. The breakers are available in 100 to 600-amp frame sizes and continuous current ranges of from 15 to 600 amp.

In recent years there has been an increased interest in self-supporting aerial cables. Self-supporting cables consist of one or more conductors supported by a copperweld in-built messenger and held together by a copper binding tape.

Self-supporting cable is being used as high voltage feeders and secondaries where cost of underground construction is prohibitive and where conditions are not favorable for uninsulated overhead wiring. It is available in all voltages up to 15 kilovolts and in most any design needed for railroad use.

Some advantages of self-supporting cable are:

1. Reasonable cost.
2. Simple to install.
3. Good appearance.
4. Light weight.

5. In-built messenger serves as neutral.

6. Less congestion on poles.

Concerning the recharging of dry cells, such as those used in lantern batteries, the report states:

Although the railroads are volume users of dry cells, it is doubtful that on most railroads sufficient quantity of dry cells could be put under controlled conditions of use to make the recharging of these dry cells economically sound.

Mercury batteries are described as suitable only to applications in which small size is of paramount importance. They produce energy by means of electrochemical action between a zinc anode, mercuric oxide and graphite as a cathode. The electrolyte is potassium hydroxide. The nominal potential is 1.34 volts per cell.

In reply to a question, R. C. Welsh, Jr., (PRR), who presented the report said there is, at present, no satisfactory rechargeable lantern battery. This was confirmed by further discussion. It was also recommended that no further report be made on recharging dry batteries.

C. R. Troop explains why aluminum cables are receiving new consideration.

## Wire, Cable and Insulating Materials

The Committee on Wire, Cable and Insulating Materials reports that the temperature limits for butyl insulation have been revised by the cable industry and this type of insulation is now recommended for 90 deg C. copper temperatures for cables rated from 0 to 5,000 volts and 85 deg C. for cables operating above 5,000 volts. This makes possible a reduction in the size of conductors, and a revised table of conductor sizes is given in the report.

General recommendations for the application of pressure-type terminals are given in the report. It is stated that the terminal should always operate as cool or cooler than the wire.

The report states that with insulation which will withstand higher temperatures, it may now be possible to use aluminum conductors in the same size conduit now used for copper. The insulation will, of course, permit smaller size copper conductors.

### Discussion

The report was presented by C. R. Troop, (NYC). Asked if there should be specifications for solderless terminals, Mr. Troup said it is almost impossible to describe a method and have the method apply to more than one manufacturer.

Outstanding examples of good railroad lighting are described by G. L. Sealey.

## Illumination

A general discussion of illumination requirements of passenger cars, contained in the report of the Committee on Illumination, states beauty is fully as important as utility in designing a lighting system. Pleasing colors with reflection factors of 35 to 50 per cent should be used. Glossy finishes should be avoided. Illumination values of 20 footcandles on the 45-deg reading plane to 5 footcandles on the floors of passageways and vestibules are recommended. Detailed requirements of various types of cars are described.

The importance of cleaning reflectors and reflecting surfaces is emphasized. Due to rising labor costs, the report recommends the practice of group lamp replacement in cars. The usual group replacement time for incandescent lamps is 60 to 80 per cent of rated lamp life.

Deluxe fluorescent lamps are recommended for public areas, including coaches, diners, waiting rooms, lounges restaurants, etc. Standard fluorescent lamps are called the logical choice in service, storage, shop, and office areas to provide maximum efficiency where color values are not too critical.

Announcement is made of a new 200-watt, PAR-56 locomotive headlamp, to replace the existing 200-PAR-56, 30-volt lamp. Benefits expected are an increase of 30 per cent in beam candlepower, improved maintenance of light and simplified installation, since the beam pattern is round, permitting the lamp to be installed in any position.

Reference is made to electroluminescent lighting in which fluorescent material in large sheets forms one side of a condenser and is excited by a-c current. The present maximum efficiency of this type of lighting is 10 per cent, similar to that of moderate-sized incandescent lamps. Brightness of the source can be as high as 2,000 footlamberts which is about the same as a cool white fluorescent lamp.

The latter part of the report consists of illustrated descriptions of station, yard and platform lighting.

### Discussion

The report was presented by G. L. Sealey (Reading). All of the report concerning rolling stock and fixed properties listed under Assignment No. 1 for revision of the Manual was okayed for letter ballot. There was considerable discussion concerning lamps for locomotive and passenger car lighting. The remainder of the report was accepted as information.

## Car Electrical Equipment

The Committee on Car Electrical Equipment had 22 assignments. Reports on these assignments which have to do with new developments and factors of immediate concern to railroad operation is the question of standard voltages for the various circuits on the new lightweight trains. Primary power supply is well established at 440 volts a-c but there is little agreement on other circuits. The committee recommends 110 a-c for all general lighting and for communication systems and control circuits. A voltage of 12 d-c is suggested for emergency lighting and marker lights and 12 d-c for call bells and annunciators. Three-phase 440-volts is recommended for heating and for motors of ½ hp and above. For kitchen apparatus, the committee recommends 110 or 220 a-c.

Concerning high-potential tests on car wiring, the report recommends RMS values of 60-cycle a-c, of 1,000 volts for 32- and 64-volt circuits; 1,200 volts for 110-volt circuits; 1,500 volts for 220-volt circuits, and 2,000 volts for 440-volt circuits.

T. G. Isel reported on needs of voltage standardization for light-weight trains.

P. B. Burley describes a new electronic tube tester.

The Electrification Committee, represented by L. B. Curtis, is doing spade work for future electrification.

Two new developments in caboose generator drive are described. One, of which 11 are in service on Milwaukee cabooses, consists of a conventional Spicer caboose drive having a 3.70 to 1 ratio. The other is a combined Spicer and Sunstrand hydraulic drive. This includes a hydraulic pump, directional fluid valve, hydraulic pressure regulator, flexible hydraulic transmission lines and hydraulic motor driving an a-c generator.

A new design of permanently attached battery trainline jumper is offered as a means of reducing losses of jumpers and assuring their being available when needed.

In a comparison of lead-calcium battery grids with lead-antimony grids, the committee reports that the lead-calcium batteries cost from 12 to 15 per cent more than the lead antimony. Tests made on several railroads indicate that the life of the lead-calcium batteries is greater than lead-antimony, that efficiency is higher and that the need for flushing is reduced. This is because there is less local action on the lead-calcium plates.

A transistorized ripple voltmeter has been developed to measure the high frequencies developed in commutation. It is proposed to interpret the amplitude of these currents as an indication of a commutating conditions.

### Discussion

The report was presented by T. G. Isel, (Pullman Company). Discussion centered largely upon the testing of automatic clutches. It was said that no satisfactory means had been developed, that those proposed were either too costly or ineffectual. It was felt, however, that further efforts should be made to find suitable means of testing because the railroads have had failures which could not be explained.

Discussion of permanently attached trainline jumpers disclosed that they are manufactured both by Joy Manufacturing Company and the Pyle-National Company.

## Radio and Communication

The first part of the Report on the Application of Radio and Communication Systems to Rolling Stock is concerned with Manual revisions. Also included and recommended for submission to letter ballot for inclusion in the Manual is a specification for a tube tester. It is for such testing as involves a determination as to whether the tube is in a condition suitable for use or continued use in radio receivers, carriers, public address amplifiers and similar industrial electronic equipment.

With reference to developments concerning application of television to rolling stock, the report states that this has been limited almost entirely to installations on railroad business cars.

### Discussion

The report was presented by P. B. Burley (IC). Assignments 1 and 2, concerning Manual changes and cooperation with the Communications Section were okayed for letter ballot for inclusion in the Manual. Assignments 4 and 6 dealing respectively with conversion equipment for communication radio power supply and developments on the application of television to rolling stock were accepted as information.

## Railway Electrification

The Report on Railway Electrification again emphasizes the opinion now widely held that electrification will again find new application in this country, and that when it does, the overhead contact system will carry 60-cycle, 25-kv., a-c power.

Fibre-glass poles, the report states, have definite potentials because of their high-strength and light weight. Aluminum also is being considered for contact systems because of its relatively low cost, 30 per cent that of copper for the same conductivity. Recent experience with high-speed operation, it is felt, calls for improved catenary design, if speeds are to be increased considerably.

Problems of phase unbalance created in power networks by single-phase electrification have caused engineers some concern, but it is felt that with the greatly increasing sizes of networks that it will not create any insurmountable problems.

### Discussion

The report was presented by L. B. Curtis (PRR), and L. W. Birch (Ohio Brass Company). Of particular moment in the discussion was a point made by H. F. Brown (Gibbs & Hill). He called attention to the enormous costs of reorganizing and rearranging of other electrical circuits when railroads have been electrified in the past, and suggested that adequate preliminary planning be made to eliminate expensive alterations in the future. Much of the work, he said, may be accomplished now by designing communication and signal facilities looking forward to the time when electrification may come again.

---

Suspended cross-track lighting in the Citico Yard of the Southern at Chattanooga, Tenn.

# *It Was the Maintainer Who Slipped*

**By Gordon Taylor**

A REPORT was made by the crew of an EMD passenger unit that the wheelslip relay was operating more frequently than usual.

Since the track condition was good, the crew reported that they thought it was not a case of actual wheel slippage. It seemed more a case of some wiring trouble, that might cause undesired action of the wheelslip relay.

A test of the relay indicated that it was correctly adjusted. A check of the motor field shunting circuits failed to reveal a condition that might have created an unbalanced condition existing in the traction motors.

The locomotive was permitted to return to service and again the crew complained of action of the wheelslip relay. The maintenance force rechecked the control wiring circuits but found nothing wrong. Some thought was given to the idea that there might be too much difference in the diameter of driving wheels, driven by different motors.

If all wheels were of equal diameter, the current drawn by each motor should be approximately the same. If, however, one pair of wheels should be larger than the others, the motor driving that pair would tend to draw a larger share of current. This might conceivably create an unbalanced condition between motors that would serve to actuate the wheelslip relay.

However a check of wheel diameters revealed no difference of diameters greater than three-quarters of an inch between any two pairs. A difference, not to exceed three-quarters of an inch, is standard practice on the road under discussion.

The diesel unit was returned to service and was again the subject of reports of wheel slip relay trouble.

Finally, the electrical foreman decided to remove the No. 2 traction motor for a thorough clean up, and not because it was suspected of being connected with the wheelslip trouble. A spare motor was installed in place of the No. 2 motor and the diesel unit was returned to service.

This time there was no report of undesired action of the wheel slip relay. The trouble cleared up with the replacement of the No. 2 motor. The problem now boiled down to a question of "what is wrong with the first No. 2 traction motor?" A series of electrical tests failed to reveal any faults with the motor.

There was nothing much left to check, so the electrical foreman decided to count the teeth in the motor drive pinion. To his amazement, he found only 19 teeth, instead of the 20 that he expected to find. This locomotive was geared for a top speed of 85 mph which calls for a gear combination of 57/20.

In some manner, a 19-tooth pinion had got mixed in with a lot of 20-tooth pinions, and had been mounted on the motor shaft without anyone detecting the mistake. Since the pinion had one tooth less than standard, it was small enough that it could be assembled in the truck with a standard driving gear. Had it been a pinion with an extra tooth, the error would have probably been discovered when the motor was installed in the truck.

The faulty pinion had 19 teeth instead of 20, and that meant the armature speed would increase about 1/20 or 5 per cent. That would be equivalent to a 5 per cent difference in driving wheel diameter which, on a 36-in. wheel, would amount to 1.8 in.

Since there was already a difference of about ¾ in. in driving wheel diameters, the difference caused by the small pinion added to the existing difference and created a condition equivalent to a difference of 2.5 in. in driving wheel diameters.

That difference of wheel diameters created the unbalance between traction motor currents that caused the wheel slip relay to report so many cases of wheel slip.

This series of articles is based on actual experiences of men who operate and maintain diesel-electric locomotives.

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## average better than 6,000,000 car miles per setout...

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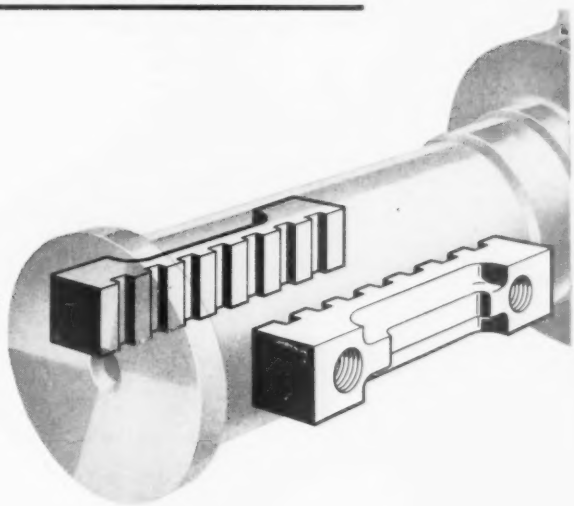

*Stabilization of bearing assembly provides a low-cost means of getting better bearing performance, FAST*

MORE than 3,000 freight cars are now equipped with Magnus Journal Stops. These cars have chalked up more than 32,000 car months of service — with only 6 bearing failures. That's an average of better than SIX MILLION CAR-MILES per setout. And it's a performance record that you can't beat with any other type of freight car bearing, regardless of price!

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# Solid Bearings

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# 6-SL Brake Equipment

*This series of Questions and Answers pertains to the 6-SL air brake equipment for switching locomotives. The references to the pamphlet, page and part numbers in the text indicates where the original material may be found in the manufacturer's technical publications and instruction pamphlets. Authorized persons may obtain a copy of Instruction Pamphlet Number 5046-15 which deals with this equipment by applying to the nearest district office of the Westinghouse Air Brake Company.*

**W242-Q—What flow of air then takes place?**
A—Distributing valve release pipe air flows to the atmosphere past exhaust valve *134*, passage *19*, cavity *q*, the exhaust port and brake valve exhaust (EX).

**W243-Q—Describe the action, if the independent brake valve handle is moved only partially toward Running position.**
A—Distributing valve release pipe air pressure in chamber *F* will be reduced pressure and piston spring *148* will move seat *127* into contact with exhaust valve *134* and prevent further flow of air from the distributing valve release pipe.

**W244-Q—What happens if the brake valve handle is moved** to *Running* position?
A—The handle cam is moved away from the balancing levers and the exhaust valve spring opens the exhaust valve, venting all air pressure from the distributing valve release pipe.

**W245-Q—In view of the above, how may the distributing valve release pipe pressure be decreased?**
A—In small graduations or exhausted, as desired.

**W246-Q—What other air flow ensues with the reduction of distributing valve release pipe pressure?**
A—Venting of distributing valve release pipe air permits air to flow from the application cylinder through passage *hl,2*, cavity *k* in the distributing valve slide valve, passage *i,4* and the distributing valve release pipe *4* to exhaust.

**W247-Q—What action takes place with the reduction of application cylinder pressure?**
A—Brake cylinder pressure on the opposite face of the application piston moves the piston to *release* position. In this position brake cylinder air flows to the atmosphere through ports *c,d*, and *e* and the distributing valve exhaust.
Independent Release, Automatic Brake Applied (Plate 8)

**W248-Q—If the brakes have been applied throughout the train by the automatic brake valve, how may the locomotive (only) brakes be released?**
A—By depressing the handle of the independent brake valve in its running position.

**W249-Q—What movement takes place when the handle is depressed?**
A—The actuating plunger *82* and attached plunger collar are moved down to contact and depress the quick release valve operating arm *90*. This moves plunger *93* to the

**W250-Q—What air flow then takes place?**
A—Air from the application cylinder flows through passages *hl,2*, application cylinder pipe, and passage *2* and *2a* in the brake valve. It continues past the unseated quick release valve *97*, and through the independent brake valve EX opening to the atmosphere.

**W251-Q—Explain the flow of air further?**
A—Brake cylinder air in chamber *b* moves the application piston *10* from *Lap* to *Release* position, permitting air in brake cylinder pipe to flow through port *c* to chamber *b*, from there to the atmosphere through ports *d* and *e*.

**W252-Q—Do these operations change conditions in pressure chamber and brake pipe?**
A—No, consequently the equalizing piston does not move until release is made by the automatic brake valve.

**W253-Q—What must be done to make a graduated release?**
A—To do this the handle is returned to its upper position. This permits spring *83* to move plunger *82* upward away from the operating arm *90*. Anchor pin spring *92* then moves arm *90* away from plunger *93* and spring *98* closing quick release valve *97*.

**W254-Q—What is the result of this action?**
A—The quick release valve is closed before all application cylinder pressure is lost.

Independent Application After Independent Release, Automatic Brakes Applied

Pamphlet 5046-15 (Page 44)

**W255-Q—What is done to re-apply the locomotive brakes after an independent release, train brakes remaining applied?**
A—The handle of the independent brake valve is moved to the *application* position.

**W256-Q—What action then takes place?**
A—The locomotive brake is then re-applied as previously described, except that application air from the independent brake valve chamber *F* through passage *4* and the distributing valve release pipe is cut off from the application cylinder by slide valve *31*, after an automatic application.

**W257-Q—What is the air flow from the brake valve control chamber F?**
A—Application air flow from the control chamber goes past application check valve *97b*, passage *2*, application cylinder pipe and passage *2* and *hl* in the distributing valve. One branch of passage *2* leads to the application chamber via cavity *n* and passage *w*.

Independent Application After Automatic Application (Plate 9)

**W258-Q—If it is desired to increase locomotive braking pressure after an automatic application of less than full service, what must be done?**
A—The independent brake valve handle is moved to the *Application* position.

**W259-Q—What then happens?**
A—This action closes exhaust valve *134* and opens inlet valve *122*, permitting main reservoir air from passage *7* to flow through passage *2* and the application cylinder pipe to the distributing valve application chamber and application cylinder. This air operates the application piston *10* and increases brake cylinder air in the manner described under "Application—First Stage."

K-H-6 Pedestal Brake Valve, Sander Operation (Plate 1)

**W260-Q—What does the Sander Valve provide?**
A—It provides sanding of the locomotive wheels in forward or reverse operation.

**W261-Q—How is sanding provided in reverse operation?**
A—By moving the sander valve handle to the extreme left position.

**W262-Q—What air flow then follows?**
A—Main reservoir air from chamber *B* is connected through a port in the rotary valve *179* to port *11* and the reverse sanding pipe.

# ANOTHER REPEAT ORDER

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## Fairbanks-Morse switchers

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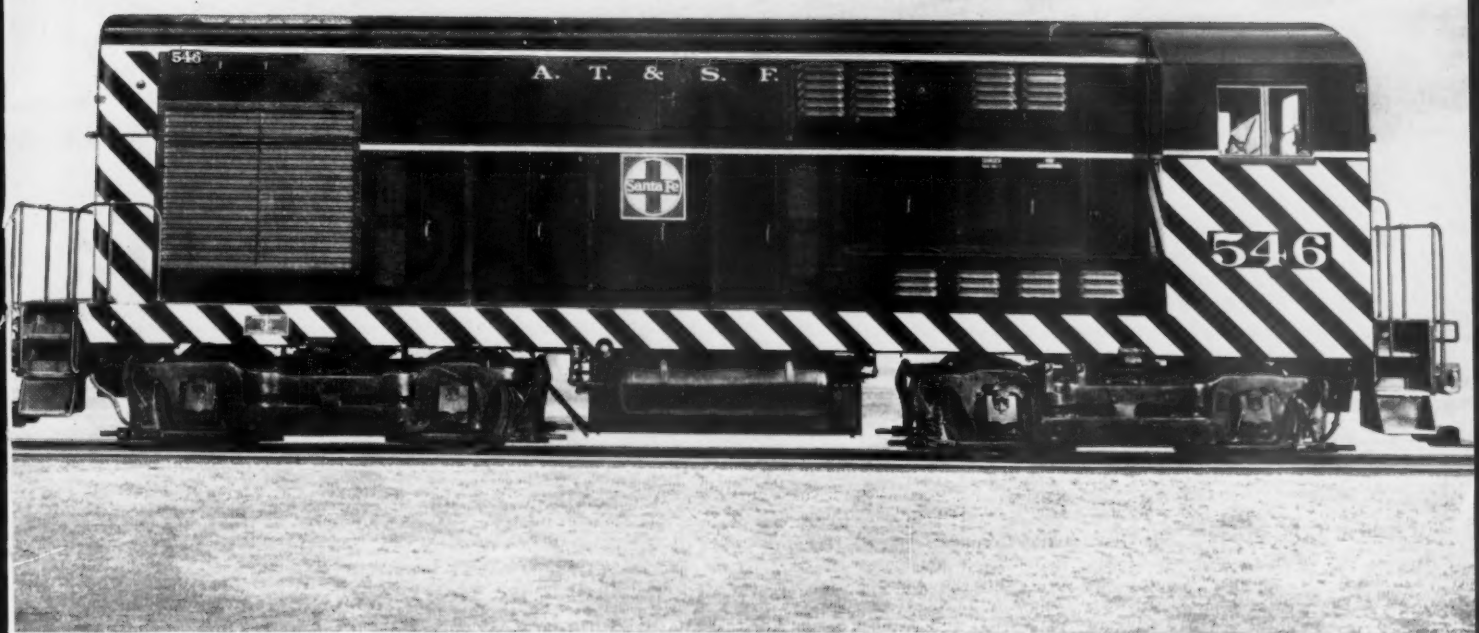


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## Roller Bearing Ownership Jumps

Ownership of roller bearing freight cars is now well over 37,000, according to F. Fahland, UP, chairman of the Committee on Roller Bearings. This is an increase of over 5,000 cars from figures compiled by the Committee on February 13, 1957, and published in the table at the right.

The Committee's specification for journal roller bearings was approved by letter ballot on March 1, 1957, and the Research Laboratory's recommendations on inspection and test procedures has been accepted by the roller bearing committee. spokesman for the roller bearing manufacturers asked for reconsideration of the laboratory tests called for under this code.

The Committee and manufacturers have agreed on standardization of the following roller bearing components: Cap Screws, Countersunk Pipe Plug, and Locking Plate. E. K. Bloss, B&M, said that he would like to see the specification require that the locking plate be used only once. He went on to state that the B&M has been encountering interference between package roller bearings and truck side frames on some of its recently-completed cars.

The Committee is working on preventing corrosion of roller bearing fillets which may be a source of axle failures due to development of stress corrosion cracks. Manufacturers have been cooperating in developing methods to prevent this corrosion.

## Tank Car Repairs

The Tank Car Committee called atention to ICC Special Order 24 effective August 31, 1956. This completely revised Section 78 of ICC regulations covering tank car specifications, and some items of Section 78 affect the shippers. Since then, the Committee on Tank Cars and the General Committee made revisions in AAR specifications including an alternate steel of fire-box quality for all plates used for tank, expansion dome and the manway nozzles.

Changes in Appendix R require radiographing of any weld seam in an area where deformation is removed. The ICC is expected to make similar requirements effective in its regulations soon.

## This Is the Roller Bearing Freight Car Fleet

| Railroads | Hop. | Box | Gon. | Flat | Others | Total |
|---|---|---|---|---|---|---|
| Akron, Canton & Youngstown | 75 | 1 | 1 | — | 6 | 83 |
| Apalachicola Northern | — | — | — | — | 50 | 50 |
| Atchison, Topeka & Santa Fe | — | 420 | — | 53 | 266 | 739 |
| Atlantic Coast Line | 3,584 | 998 | — | 103 | 2,420 | 7,105 |
| Baltimore and Ohio | 55 | 10 | — | — | — | 65 |
| Boston and Maine | 326 | 1,499 | — | 225 | — | 2,050 |
| Butte, Anaconda & Pac. | — | — | — | — | 200 | 200 |
| Canadian National | — | 1 | — | 38 | — | 39 |
| Central of Georgia | — | — | — | — | 1 | 1 |
| Chesapeake and Ohio | 998 | 500 | — | — | 100 | 1,598 |
| Chicago & Eastern Illinois | — | — | — | 1 | — | 1 |
| Chicago & North Western | — | 1 | — | — | — | 1 |
| Chicago, Burlington & Quincy | 110 | — | — | 11 | 52 | 173 |
| Chicago Great Western | 185 | — | — | 1 | 37 | 223 |
| Chicago, Milwaukee, St. Paul & Pacific | 10 | 5 | — | — | 113 | 128 |
| Chicago, Rock Island & Pacific | — | — | — | 50 | 115 | 165 |
| Clinchfield | — | 10 | — | — | — | 10 |
| Denver & Rio Grande Western | — | — | — | — | 1 | 1 |
| Duluth, Missabe & Iron Range | — | — | — | — | 20 | 20 |
| Erie | — | — | — | 50 | — | 50 |
| Great Northern | 440 | 262 | 46 | 2 | 49 | 799 |
| Gulf, Mobile & Ohio | — | — | — | 1 | 313 | 314 |
| Illinois Central | 30 | — | — | — | — | 30 |
| Kansas City Southern | 80 | — | — | 50 | — | 130 |
| Louisiana and Arkansas | 75 | — | — | — | — | 75 |
| Louisville & Nashville | — | — | — | — | 250 | 250 |
| Mexican Railways | — | 1 | — | — | — | 1 |
| Missouri Pacific | — | 1 | — | — | — | 1 |
| Nevada Northern | — | — | — | — | 4 | 4 |
| New York Central | 1 | — | — | — | — | 1 |
| New York, Chicago & St. Louis | 139 | 12 | — | — | — | 151 |
| New York, New Haven & Hartford | — | — | — | 308 | 125 | 433 |
| Northern Pacific | 100 | — | — | — | 350 | 450 |
| Pennsylvania Railroad | 220 | 3 | — | 600 | — | 823 |
| Pittsburgh & W. Va. | 50 | — | — | — | 7 | 57 |
| Reading | 150 | — | — | — | — | 150 |
| St. Louis—San Francisco | 400 | — | — | — | 210 | 610 |
| St. Louis—Southwestern | — | 5 | — | — | — | 5 |
| Seaboard Air Line | — | — | 200 | — | 300 | 500 |
| Southern Pacific | — | 354 | — | 161 | — | 515 |
| Southern Railway | 385 | 425 | 1 | 112 | 250 | 1,173 |
| Spokane, Portland & Seattle | — | — | — | — | 2 | 2 |
| Toledo, Peoria & Western | — | 1 | — | — | — | 1 |
| Union Pacific | 568 | 9 | — | — | 1,344 | 1,921 |
| Wabash | 100 | — | — | 70 | — | 170 |
| Western Maryland | 1,953 | — | — | 98 | — | 2,051 |
| Western Pacific | 110 | 1 | 100 | 75 | 35 | 321 |
| Total | 10,144 | 4,519 | 348 | 2,009 | 6,620 | 23,640 |
| **Private Car Lines** | | | | | | |
| ACF Industries | — | — | — | 9 | 408 | 417 |
| American Refrig. Trans. | — | — | — | — | 25 | 25 |
| American Steel Foundries | — | 1 | — | — | 2 | 3 |
| Burlington Refrig. Express | — | — | — | — | 200 | 200 |
| Columbia-Southern Chemical | — | — | — | — | 5 | 5 |
| Dupont, E. I. de Nemours | — | — | — | — | 30 | 30 |
| Electro-Motive Division | — | — | — | — | 2 | 2 |
| Erie Mining Co. | 185 | — | — | — | — | 185 |
| Ethyl Corporation | — | — | — | — | 38 | 38 |
| Fruit Growers Express | — | — | — | — | 1,809 | 1,809 |
| General Motors Overseas | — | 11 | — | — | — | 11 |
| Greenville Steel Car | — | — | — | 1 | — | 1 |
| International Steel Co. | — | 1 | — | — | — | 1 |
| Merchants Despatch | — | — | — | — | 50 | 50 |
| Petroleos Mexicanos | — | — | — | — | 4 | 4 |
| Pullman-Standard Car Mfg. | — | — | — | 1 | — | 1 |
| Railway Express | — | — | — | — | 500 | 500 |
| Shippers Car Line | — | — | — | — | 15 | 15 |
| U. S. Army | — | — | — | 24 | 180 | 204 |
| U. S. Navy | — | 1 | — | — | — | 1 |
| Western Fruit Express | — | — | — | — | 150 | 150 |
| Total | 185 | 14 | - | 35 | 3,478 | 3,712 |
| **Non-Interchange Cars** | | | | | | |
| Alaska | — | 1 | 109 | 50 | 20 | 180 |
| Iron Ore Co. of Canada | — | — | — | — | 3,025 | 3,025 |
| Quebec, North Shore & Labrador | — | 15 | — | — | 95 | 110 |
| Reserve Mining | — | — | — | — | 453 | 453 |
| Weirton Steel | — | — | — | — | 8 | 8 |
| Total | — | 16 | 109 | 50 | 3,601 | 3,776 |
| **SUMMARY** | | | | | | |
| Railroads | 10,144 | 4,519 | 348 | 2,009 | 6,620 | 23,640 |
| Private Car Lines | 185 | 14 | — | 35 | 3,478 | 3,712 |
| Non-Interchange Cars | — | 16 | 109 | 50 | 3,601 | 3,776 |
| Grand Total | 10,329 | 4,549 | 457 | 2,094 | 13,699 | 31,128 |

**Compare These Properties**

| Properties | Armco High Strength Steel | Structural Carbon Steel (Grade B—for Railway Cars) |
|---|---|---|
| Yield Strength (psi-min) | 50,000 | 27,000 |
| Tensile Strength | 70,000 | 50-62,000 |

# Get more payload miles per car dollar with Armco High Strength Steel

Cars made of Armco High Strength Steel are misers with maintenance dollars. Parts stay in service longer because they are stronger and more resistant to corrosion.

In the atmosphere, for example, Armco High Strength Steel has several times the corrosion resistance offered by mild steel. And this low-alloy steel is much stronger. Its yield strength is nearly twice that of mild steel; its tensile strength about 20 per cent greater.

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## EQUIPMENT

*(Continued from page 6)*

enclosures for easy mounting adjacent to the motor. It can be supplied with an electrical lock as optional equipment which is released only when the operator presses the starter button. Magnetic starters are supplied as optional equipment if needed. *Selenibrake Division, American Rectifier Corporation, Dept. RLC, 95 Lafayette st., New York 13.*

### Freight Car Paint

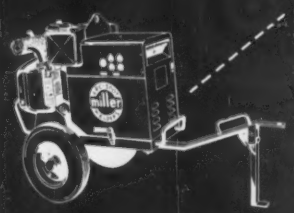
Won-Spray paint can be applied directly to bare, scale-free steel. It was developed as the result of a demand for a coating which would reduce hold-time for application to a minimum and provide maximum protection when the car is returned to service.

The product can be used in a single spray application directly on a clean metal with a dry film thickness up to 4½ mils. It can be used in a conventional two coat operation, applying the first coat to 1½ mils dry film thickness, followed by a finish coat applied to an approximate dry film weight of 2½ mils.

The paint can be applied with any standard spray equipment, including those units employing heat or superheated steam in place of air. It is designed with balanced flow properties over a wide range of temperature and humidity conditions. According to users, the paint does not creep away from rivet heads or sharp corners.

Many one-coat paints thicken rapidly at low temperatures, thus making it necessary to use hot-spray equipment for application or to add an excessive amount of thinner when used at temperatures below 70° F. However, Won-Spray can be used with cold spray equipment without thinner addition at temperatures as low as 50 deg F. The finish is available in all freight-car color standards, including jet black, and in a variety of modern color designs, including bright colors and light tints. *Railway Finishes, National Lead Company, Dept. RLC, 111 Broadway, New York 6.*


NEW!



Now equipped with a new and larger Onan 12.9 hp engine, the new Miller AEA-200-L produces a full 225 amperes of continuous rated, high cycle welding current or, 5 KW of 110/220 ac power for operation of power tools, lights, milking machines, etc., or, 1 KW of dc power.

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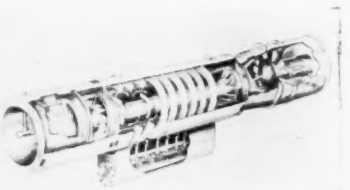
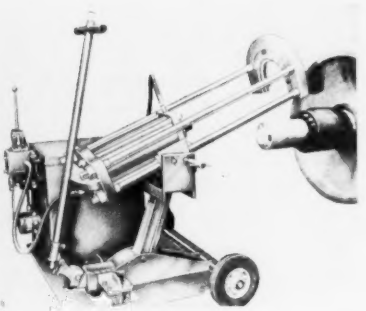


### Miniature Dust-Collector

The Microdyne, a cylindrically shaped wet type dust-collector, is said to be 1/20 to 1/10 the size of any comparable unit and capable of collecting over 99 per cent of dust-particles 5 microns and larger in size. The unit represents an unusual application of certain aspects of wet inertial type collection and is available in a standard line ranging from 2500 to 64,000 cfm.

The unit's size allows installation as part of the duct. It can be supplied in stainless steel. *Joy Manufacturing Company, Dept. RLC, Oliver Building, Pittsburgh 22.*



### Axle Journal Bearing Remover and Installer

The Model OTC Y4400-A railroad axle bearing pulling and installing machine

*(Continued on page 71)*

# SHELBY SEAMLESS TUBING

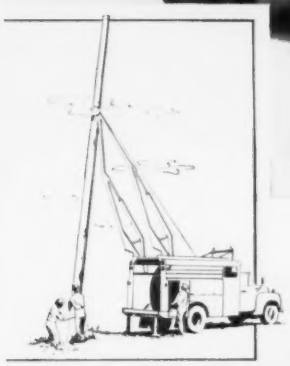
## helps "Pole-Master"* handle poles like matchsticks

THE POWERFUL, two-legged boom of this "Pole-Master" Hydraulic Derrick is made of cold drawn tubes of USS Shelby Seamless Mechanical Tubing. Capable of handling poles up to 75 feet in length with relative ease, the boom is activated by two hydraulic cylinders, also of Shelby Seamless, which are powered by a heavy-duty hydraulic pump. The derrick has an operating arc of more than 180 degrees, and is designed to "set" poles or "pull" them from the ground. The "Pole-Master" can be used under the most severe work conditions in any weather or climate.

Here is an application in which Shelby Seamless Tubing really excels, for it brings into play all the desirable qualities that Shelby Seamless possesses—high strength, uniformity, shock absorbency, dimensional accuracy, lightness and workability.

Produced to exacting standards by the world's largest manufacturer of tubular steel products, Shelby Seamless is available in a wide range of diameters, wall thicknesses, various shapes and steel analyses. You are invited to call on our engineers for assistance. They will be happy to submit recommendations based on a study of your particular requirements.

*Manufacturer's name on request.



WALLS WITHOUT WELDS

NATIONAL TUBE DIVISION, UNITED STATES STEEL CORPORATION, PITTSBURGH, PA.
*(Tubing Specialties)*

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

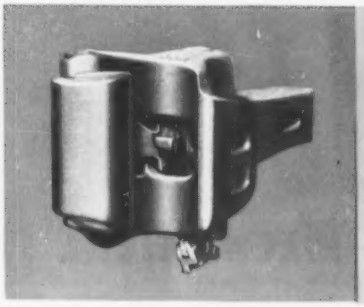
USS

**SHELBY SEAMLESS MECHANICAL TUBING**

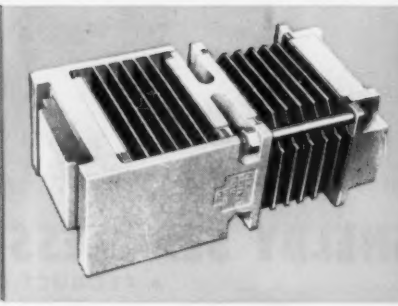
A PRODUCT OF NATIONAL TUBE

UNITED STATES STEEL

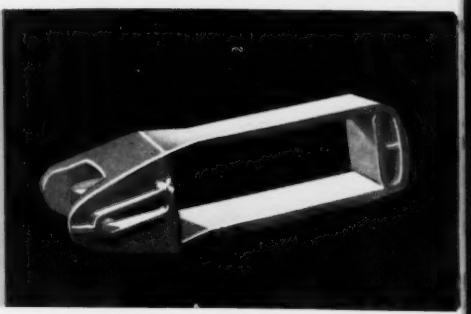
*There's Improved Railroading with National Specialties*



*National Type E Couplers*



*National Type MF-400 Rubber-Cushioned Draft Gears*



*National Y-40 Yokes*

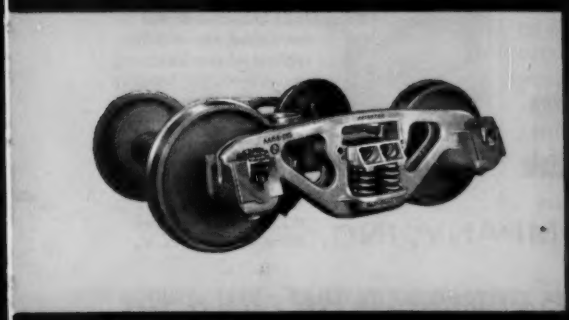
*Example:*

# PACIFIC FRUIT EXPRESS

Pacific Fruit Express pursues a continuing program of upgrading its fleet of refrigerator cars. PFE's latest 2,000 car program leaves nothing to chance in protection of valued perishable commodities. 1,800 of these cars are of the latest design equipped with ice bunker and 200 with mechanical refrigeration units for protection of frozen foods . . . and many with National Rubber-Cushioned Draft Gears and National C-1 Trucks to protect PFE's rolling stock investment.

LEADER TO PROGRESS
P R I
MEMBER

## NATIONAL MALLEABLE and STEEL CASTINGS COMPANY



*National C-1 Trucks*

*Railway Division Headquarters*
*Cleveland 6, Ohio*

*International Division Headquarters*
*Cleveland 6, Ohio*

*Canadian Subsidiary*
*National Malleable & Steel Castings Company*
*of Canada, Ltd., Toronto 1, Ontario*

**Established 1868**

COUPLERS · YOKES · DRAFT GEARS · FREIGHT TRUCKS · JOURNAL BOXES

**This radio-equipped caboose** is one of the 32 now in service on the Lackawanna. Receiver and transmitter are powered by an alternator-rectifier-battery system.

**Instant communication** between conductor and engineer or dispatcher speeds freight service — is maintained by reliable nickel-iron-alkaline batteries in radio's power system.

# Lackawanna puts Edison nickel-alkaline batteries in 32 radio-equipped cabooses

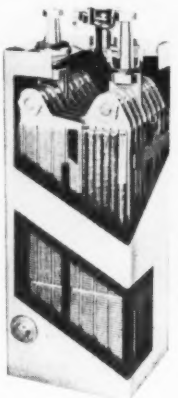
Today, Edison nickel-iron-alkaline batteries ride the high iron in style — in 32 Lackawanna cabooses. Their job: power for two-way radios. And they do it well!

First, they're mechanically *durable*. Nickel-iron-alkaline batteries' steel cell construction withstands the shock and vibration of freight service. The batteries are practically unaffected by heat . . . and they're not subject to injury by freezing.

Second, they're electrically *dependable*. The Lackawanna gets uninterrupted power from Edison nickel-iron-alkaline batteries because they're electrically sound. They're not harmed by occasional overcharging or excessive drain from irregular run conditions.

### Greater operating economy, too

Nickel-iron-alkaline batteries have a long average service life. This means lower replacement costs and lower maintenance costs . . . substantial savings year after year.



**Take a tip from** the Lackawanna. Specify nickel-alkaline batteries for your communication systems, and for signals, car lighting and air-conditioning, and in industrial trucks.

INCO THE INTERNATIONAL NICKEL COMPANY, INC. 67 Wall Street New York 5, N.Y.

## EQUIPMENT

(*Continued from page 66*)

was designed to perform its job without removal of car wheels and destroying the all-important wheel fit. A powerful, double-acting ram provides the power for removing and installation of the bearing assembly. The ram has a capacity of 74 tons for removal and 52 tons for installation. It is mounted in a puller frame which can be raised or lowered hydraulically, to adjust for alignment with the car wheel axle.

The machine is self-contained, with motor, pump, ram, oil reservoir, all electrical as well as hydraulic controls in one unit. The unit is mounted on easy-rolling wheels and can be moved from job site to job and operated by one man. Special adapters are available to service 4-¼ x 8, 5 x 9, 5-½ x 10, 6 x 11 and 6-½ x 12 in. freight car journal bearing assemblies.

The pump is of the radial piston type which will produce 140 cu in. oil volume per min at 6000 psi and 231 cu in. oil per min at zero pressure. It is driven by a 2 hp, 220 volt motor. A thermal element for 220 volt is standard. *Owatonna Tool Company, Dept. RLC, Cedar st., Owatonna, Minn.*

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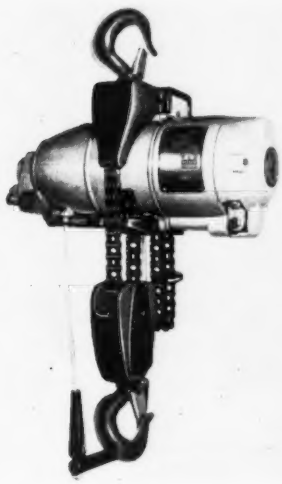


### Air-Powered Hoist

Of 4000-lb capacity and fitted with either roller or link chain, the hoist's lifting and lowering speed varies from a creep to 10 ft per min at full load and 90 psig air line pressure. Length of lift is 8 ft and the hoist operates with either a one-hand control bar or remote pendant control. Its axial-piston compressed air motor assures positive starts and stops and prevents motor burnouts during stalls. When the air supply fails or maximum lowering speed is exceeded, the brake design permits the operator to retain control of the hoist while lowering the load.

The device weighs 100 lb and is

**Snap-on* Impact Sockets last 5 times longer . . . and then some**

***...on Railroad Car Assembly Line***

C. S. BRACKEN
*Snap-on* Sales Engineer

American Car and Foundry, Division of ACF Industries, Incorporated, uses impact sockets in its Huntington, West Virginia, plant on a temporary bolting operation during fabrication of railroad car spines.

Power impact sockets used on this job formerly lasted about 12 shifts. Then *Snap-on* sales engineer, C. S. Bracken, suggested a specially heat-treated *Snap-on* Socket. Result: now, after 65 shifts, the *Snap-on* Sockets have shown no visible sign of wear. Conservative estimates are that this switch to *Snap-on* Sockets will result in a saving of several hundred dollars per year.

**Snap-on Railroad Tool Specialist as near as your phone**

The *Snap-on* sales engineer is a specialist who devotes *all* of his time to the industrial application of hand tools. He welcomes the opportunity to answer questions and help you get the most out of the tools you use in your business. Write us for his name or call your nearest *Snap-on* branch. Free catalog of industrial wrenches and special railroad tools is yours for the asking.

*Snap-on is the trademark of Snap-on Tools Corporation

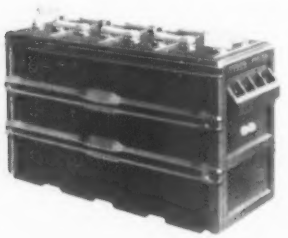
**SNAP-ON TOOLS CORPORATION**
8130-H 28th Avenue • Kenosha, Wisconsin

## NEW BULLETIN gives latest tips on C&D Diesel Starting Batteries

**Tells how to reduce locomotive maintenance ... how to 'start your Diesels fast'**

Motive power men and purchasing agents will find page after page of useful money-saving information in this comprehensive new bulletin on "Diesel Locomotive Batteries." Expressly prepared to help railroad men specify the right type batteries for dependable Diesel cranking service, this illustrated guide gives the complete "inside story" on the construction and operation of powerful C & D *Slyver-Clad* batteries. Conventional lead-antimony types ... special low types ... as well as the latest lead-calcium extra-long-life types are covered. Detailed charts show you how to specify the exact type battery you need for reliable low-maintenance operation.

*Write for a copy. You'll find it an important addition to your technical library.*



**Batteries built to give quick, sure starts ...**

With extra-thick, extra-long plates ... and exclusive *Slyver-Clad* construction ... C&D Diesel Starting Batteries provide power-*plus*. "Better Built Batteries" also assure:

- *high sustained voltage during cranking*
- *reduced connector loss*
- *reduced maintenance requirements*
- *long, dependable operating life*

WRITE FOR BULLETIN DL-577

**C&D BATTERIES, INC.**

*of Conshohocken, Pa.*

SINCE 1906

SALES AND SERVICE OFFICES IN PRINCIPAL CITIES FROM COAST TO COAST


equipped with swivel-mounted safety suspension and load hooks. Hook-to-hook dimension is 23½ in.

Accessories include trolleys for the hoist and air hose, a chain basket with a 20 ft capacity, filter-regulator-lubricator and a non-sparking kit to adapt the hoist for operation in explosive atmospheres. *Keller Tool Division, Gardner-Denevr Company, Dept. RLC, Grand Haven, Mich.*

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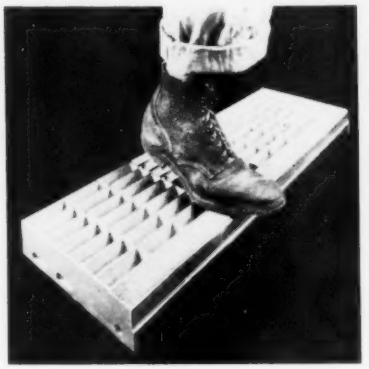


## Safety Stairs

A cast aluminum stair tread which combines safer footing with low maintenance has been designed for stairs subjected to extreme weathering or corrosive atmospheres. It is a die-cast tread with a rough slip-proof abrasive nosing and rounded, joint-free corners. Units require no protective coatings.

The treads are cast in one piece to distribute loads more evenly over all bearing bars. In tests the stair has withstood loads in excess of 3,000 lb. The non-skid nosing is made of fused aluminum oxide abrasive bonded to aluminum plate.

Three finishes are available: "As fabricated" surface for structural work, polished finish for sanitary stairway requirements, or a marine finish that is applicable to passenger car design, where treads are subjected to the elements and constant use. The anodized surface, aluminum painted, provides maximum corrosion and abrasion resistance.

Sizes now range in length from 24 in. to 42 in. Standard width is 10 in., with other widths obtainable. *Aluminum Company of America, Dept RLC, 1501 Alcoa bldg., Pittsburgh 19.*

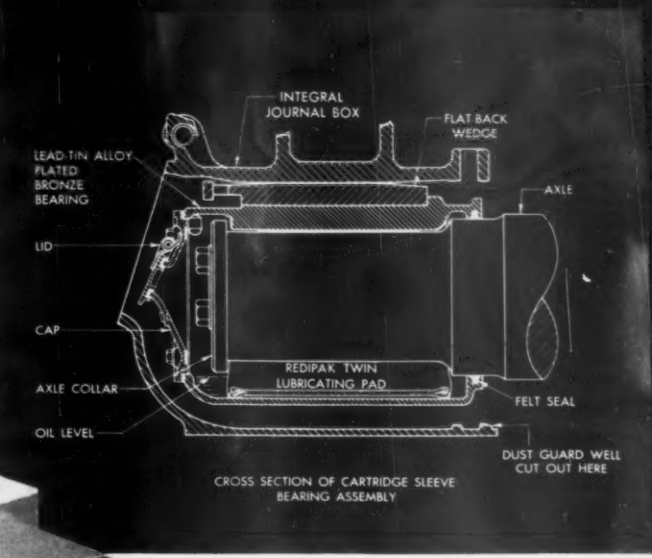
---

## Quick Tack Adhesive

Developed for installing flooring on a production line basis in trains, etc., this quick tacking and early strength adhesive has been designated as LG-735. Water based and trowelable, this gray-white opaque rubber-latex emulsion was designed for installing all types of linoleum with Armstrong Hydrocord, burlap or

*(Continued on page 74)*

*The cartridge bearing encircles the journal. The journal collar is machined off to permit assembly, and a separate collar is secured with cap screws. The cartridge unit is cast of high strength bronze and plated with a heavy-duty lead-tin alloy. It contains its own lubricating system and is effectively sealed by a lubricated felt ring riding on the conventional dust guard diameter. The Redipak twin lubricating pad is installed when the cartridge is applied to the axle. Oil is contained in the cartridge, not in the box. The usual journal box lid is not needed.*



CROSS SECTION OF CARTRIDGE SLEEVE BEARING ASSEMBLY

# Here is the New National Cartridge Bearing!

*Road service is now demonstrating that this economical sleeve bearing stands up under today's toughest freight car service*

This revolutionary new concept in journal bearing design—now being road tested—may well become the freight car bearing of the future. The National Cartridge Bearing is a complete, sealed bearing and lubricating system. It neatly fits a standard journal box after the dust guard well has been cut out. The bearing encircles the journal—so it cannot lift or shift—and contains its own oil reservoir, Redipak® twin lubricating pad, cover and seal.

Here are a few of the principal advantages offered by the cartridge bearing unit: It stands up to greater impact and braking forces than do roller bearings. It requires very little maintenance—just an infrequent check of oil level and occasional replenishment of oil supply. It assures longer life—no measurable wear on either bearings or journals in over a year's accelerated road service. It minimizes the chances of hot boxes. And finally, it provides savings in initial costs when compared to roller bearings . . . savings in installation and replacement costs . . . and savings in removal costs when a wheel change is needed.

Present service tests on three roads have proven excellent and are validating our laboratory findings. One thousand car sets have been approved by AAR for test in interchange service.

*Wheel, axle and cartridge sets are made up in advance for assembly into trucks. No bearing work is done on the rip track.*

A-5242

AMERICAN **Brake Shoe** COMPANY

RAILROAD PRODUCTS DIVISION

530 Fifth Avenue • New York 36, N. Y.

# *NEW!* A 35 Ton Hydraulic Journal Jack

*First in the Industry!*

You asked for it and here it is—a brand new jack designed and built especially for servicing heavier freight cars. It can raise 35 tons 6 inches—is only 9.7 high—weighs but 55 pounds. With the 35H9.7, the job of inspecting and renewing journal brasses can now be done without the danger of overloading a lower capacity hydraulic journal jack—and the work can be done faster with less effort! If you have the problem of lifting heavy cars, we suggest you get complete details on this new 35 ton hydraulic journal jack immediately. Write the world's oldest and largest manufacturer of lifting jacks for bulletin AD29-G.

DUFF-NORTON **Duff-Norton Jacks**

**DUFF-NORTON COMPANY**

P. O. Box 1889 • Pittsburgh 30, Pennsylvania

**COFFING HOIST DIVISION:** Danville, Illinois

Ratchet Jacks, Screw Jacks, Hydraulic Jacks, Special Worm Gear Jacks, Ratchet Hoists, Electric Hoists, Load Binders, Spur Gear Hoists

## EQUIPMENT

*(Continued from page 72)*

felt backing to steel, wood and some composition surfaces. It is said to yield a strong and flexible bond. When dry, it is both alkali and moisture resistant.

The product also can be used for bonding linoleum and rubber tile to the same kind of surfaces.

The adhesive has successfully met a series of rigid tests under simulated actual production line operations. Bonding was obtained after aging 1½ hr when linoleum was applied to test specimens of plywood and black iron sheet immediately after the adhesive was spread. *Industrial Division, Armstrong Cork Company, Dept. RLC, Lancaster, Pa.*

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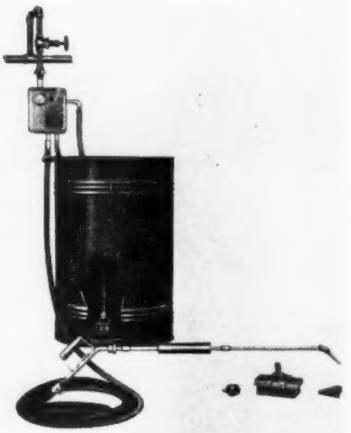


### Steam Gun

Development of The Turco Steamerette is an injector unit that uses existing steam supplies for steam cleaning, paints stripping, phosphating or sanitizing. Operation requires adjustment of only one valve, this within the range of 40-140 psi of steam. Impinging force is adequate at all pressures within this range. The unit has a built-in pressure gauge to indicate the operating pressure, eliminate fluctuating and assure uniform cleaning. Quantity and pressure of solution vary from a slow full stream at moderate temperature to a hot driving blast for heavy cleaning.

As there are no pumps, motors or equipment maintenance is minimized. The gun is quickly attached to any steam line maintaining an open pressure of 40 lb or more. *Turco Products, Inc., Dept. RLC, 6135 South Central ave., Los Angeles 1.*

---

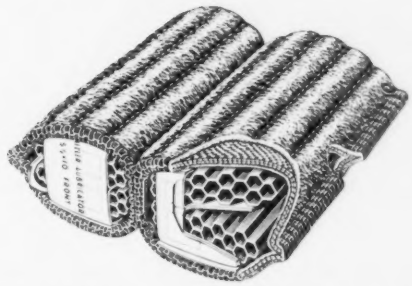
### Chemical Resistant Coating

Rubber-Coat Liquid Hypalon is the first Hypalon made available to the industrial maintenance trade in the form of a

*(Continued on page 76)*

# FOR PROGRESSIVE RAILROADING

102,000 CARSETS TO DATE



MILLER CENTER-FEED PAD LUBRICATORS

NOW
**MADE IN CANADA**
TOO

***FOR CANADIAN RAILROADS***

The lubricator that can be applied or removed without jacking box in winter or summer.

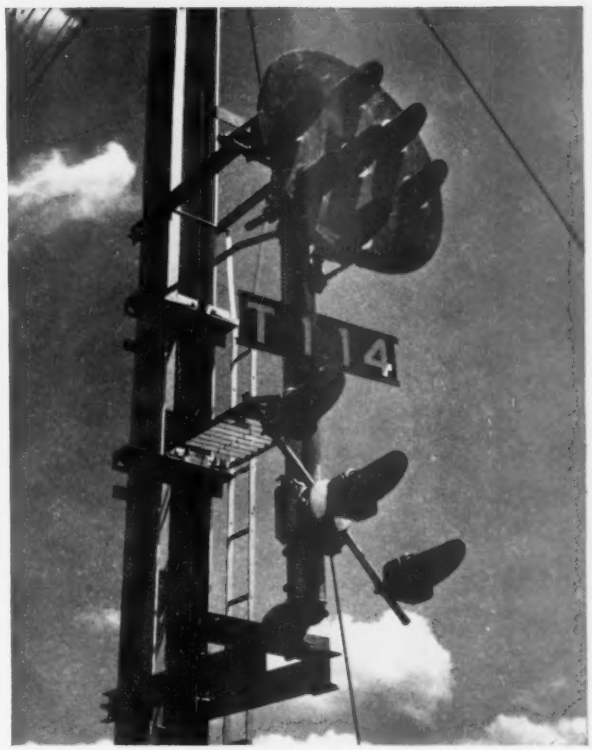
***Any quantities. Life expectancy—6 years.***

***Lowest prices—F.O.B. Napanee, Ontario or Winona, Minn.***

*Immediate Delivery, Any Quantity*

FROM BOTH PLANTS

| MILLER LUBRICATOR CO. | NAPANEE IRON WORKS, LTD. |
|---|---|
| Winona, Minnesota | Napanee, Ontario and Montreal, Quebec, Canada |




## More Ex-Cell-O pins and bushings than any other kind will pass this signal

Over 200 U.S. and Canadian railroads bank on Ex-Cell-O Pins and Bushings. Why?

Because these bushings *last longer* thanks to a super-fine finish and a diamond-hard, specially heat-treated steel case. A giant stock at our warehouses assures fast delivery of any size or quantity—and every order is backed up with an extraordinary service policy. Available assembled or separately, Ex-Cell-O Pins and Bushings wear longer because they're made better.

**Order directly from the convenient Ex-Cell-O Catalog . . . or contact your Ex-Cell-O Representative.**

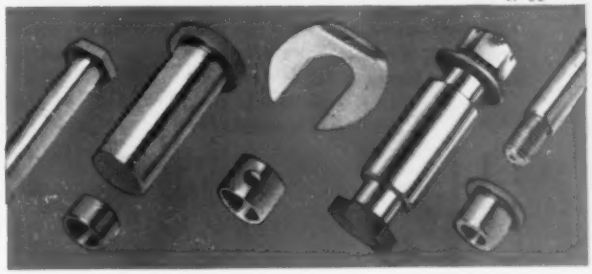
EX-CELL-O CORPORATION
DETROIT 32, MICHIGAN

EX-CELL-O FOR PRECISION

XLO

RAILROAD DIVISION • DETROIT, MICHIGAN • LONDON, CANADA

57-36



# YOU CAN PRESERVE THAT FRESHLY-PAINTED LOOK

**. . . on diesel locomotive or caboose.**

Why allow your locomotives or cabooses to quickly become dingy and dull when you can retain their like-new appearance with this simple two-step preventive method?

**MAGNUS METHOD**

1. Wash painted surface down first with water; then, scrub it from the bottom up with a fairly heavy solution of MAGNUS SUPER SURFACE CLEANER, being sure that you rinse it thoroughly before the Surface Cleaner can dry.
2. Now, with the surfaces thoroughly clean and dry, spray on a coat of MAGNUS RRFF-111 CLEAR GLOSS. One coat should be sufficient.

The result . . . a surface which may now be kept bright and new by occasional easy-washings, using a minimum of cleaning material and water. No strong alkalies or solvent type cleaners are needed, nor should they be used. Saves the cost of frequent refinishing.

For that "like-new" look for many tomorrows, be sure to write today for free, detailed information on this modern maintenance method. Write MAGNUS, 77 South Avenue, Garwood, New Jersey.

magnus

RAILROAD DIVISION
MAGNUS CHEMICAL CO., INC.
—a world-wide organization specializing in cleaning and protection of all surfaces

## EQUIPMENT

*(Continued from page 74)*

liquid brushable and sprayable film. It is said to be extremely inert to almost any type of chemical attack, and is available in white and bright colors so as to be easily identifiable on various pieces of equipment.

The coating is unaffected by ozone, which is a destructive agent for paint coatings generally. In addition, it is unaffected by petroleum derivatives, which enables petroleum-handling equipment to be identified with distinctive colors. The product was jointly engineered by E. I. du Pont de Nemours & Co. and Wilber & Williams. *Wilber & Williams Co., Dept. RLC, 130 Lincoln st., Boston 35.*

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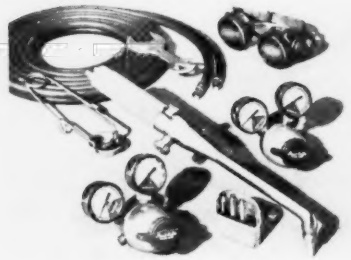


### Oxy-acetylene Welding and Cutting Outfit

The new Presto-O-Lite No. 420 welding and cutting outfit is capable of welding up to ⅜-in. and cutting up to 2-in.

Changes in the No. 420 blowpipe make it easier to use. The cutting oxygen lever has been moved to top of handle where it can be turned on and off with the thumb. A green plastic ring has been placed around the oxygen valve and a red ring around the acetylene valve for quicker and positive identification. Plastic gage crystals for oxygen and acetylene regulators have been replaced by non-clouding glass kept in place with a screw-type retaining ring.

The No. 420 outfit includes the No. 420 blowpipe, R-412 and R-413 regulators, four interchangeable tips, 12½-ft twin hose, goggles, friction lighter, wrench and complete instructions. *Linde Company, Division of Union Carbide Corporation, Dept. RLC, 30 East 42nd st., New York 17.*

---

### Set Screw Chain

Hexkes, a ring-chain combination for keeping a complete set of socket screws together, permits use of either end of any key without removal. Each key is fastened by a sliding ring, permitting key to be rotated without winding the chain

*(Continued on page 78)*

## ENGINEER'S FIELD REPORT

PRODUCT CHEVRON FILTER COAT

FIRM FARR COMPANY
Los Angeles, Calif.

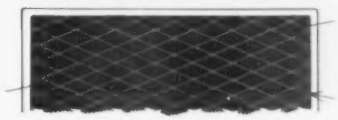
# Air filter firm uses Chevron coating exclusively

**Farr Co.** supplies impingement-type air filters, oiled with Chevron Filter Coat, to nearly all major railroads. A leader in air filtering, Farr has used Chevron Filter Coat (formerly Calol) exclusively for three years, since product was introduced.

Farr's Director of Research, S.F. Duncan, recommends gel-structure oils like Chevron Filter Coat because they improve filter efficiency. Other users report Chevron Filter Coat increases filtering efficiency as much as 50% over oils they previously used.

A heated centrifugal oiler of their own design (above) applies Chevron Filter Coat to all Far-Air filters just before they are packed for shipment. Filters are immersed in heated oil for 30 seconds, then raised and spun at 300 rpm for a minute to remove excess oil.

**Why Chevron Filter Coat ups efficiency of air filters**



- High wicking ability—quickly soaks dust particles
- Will not drip off screens—gives full filtering efficiency through entire service period
- Easily applied and cleaned—but will not wash off in service
- Does not separate, harden, or change properties in service
- Non-corrosive to metals

CHEVRON Industrial Lubricants

**For More Information** about this or other petroleum products, or the name of your nearest distributor, write or call any of the companies listed below.

TRADEMARK "CHEVRON" AND "CHEVRON" DESIGN REG. U.S. PAT. OFF.

**STANDARD OIL COMPANY OF CALIFORNIA,** San Francisco 20
**THE CALIFORNIA OIL COMPANY,** Perth Amboy, New Jersey

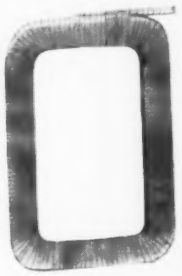
**STANDARD OIL COMPANY OF TEXAS,** El Paso
**THE CALIFORNIA COMPANY,** Denver 1, Colorado

NOW! We Can Service Your
Traction Motor Field Coils

WITH EPOXI-MICA INSULATION

GIVING

1. HIGH DIELECTRIC STRENGTH.
2. HIGH THERMAL STABILITY.
3. EXCELLENT HEAT TRANSFER.
4. MOISTURE AND CHEMICAL RESISTANCE.
5. HIGH MECHANICAL STRENGTH.



New and rebuilt field coils can be supplied cast to pole pieces.

*First to service the largest railroads with this EPOXY insulation.*

**MOTOR COILS MFG. CO.**

401 Martindale St. Pittsburgh, Pa.



America's foremost engineered lettering tools

designed to reduce your present costs 50 to 80%

Used today by 1/3rd of the Nation's leading Railroads . .

DN

Spray it— STENCILS

PRESSURE SENSITIVE TYPES

Easy to apply. No skill required. Produces the most accurate and durable type of lettering, numerals, medallion, and other types of markings. Adds long life to your identification or advertising on all your equipment . . .

Whatever your lettering problems may be regarding identification, advertising, reflective or non-reflective, the DEMP-NOCK LETTERING SYSTEMS can help you get the job done in less time.

For additional information write Dept. RR-100

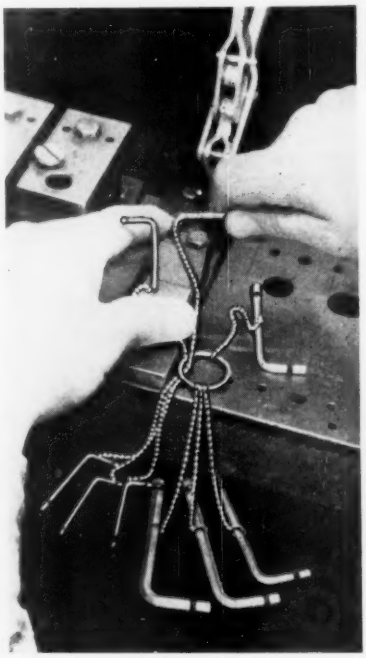
THE DEMP-NOCK COMPANY

21432 MOUND ROAD • VAN DYKE, MICHIGAN • U.S.A.

DEMP NOCK


## EQUIPMENT

*(Continued from page 76)*



around it. Standard assortment includes 9 keys, .050 to ¼ in. inclusive. Set is heat treated, finished black, and completely assembled. *Hard Inc., Dept. RLC, 3500 Pontiac Road, Ann Arbor, Mich.*

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### Powder Blower

A completely self-contained, lightweight portable unit, model No. 58600, is now available for the application of dry Magnaflux powder. A simple adjustment controls the density of the powder and two push buttons permit selection either of powder or clean air. It operates directly from any air line and requires only 20 psi.

The blower is compact and weighs only 2¼-lb empty. It is simple to operate and, according to the manufacturer, has advantages over the shaker-type powder bulbs in that it is faster, covers a wider area and distributes the magnetic particles evenly. *Magnaflux Corporation, Dept. RLC, 7300 West Lawrence ave., Chicago 31.*

## PERSONAL MENTION

(*Continued from page 12*)

H. T. Rainey, Jr.

tendent car department, appointed superintendent motive power and equipment. *Career:* Entered service of RF&P in 1943 as clerk. After holding various positions, including a short tour of duty with the AAR, returned to RF&P as assistant chief car inspector. Became chief car inspector and in December 1956 superintendent car department.

**Toronto, Hamilton & Buffalo.**—Mechanical departments consolidated under J. W. ROWLEY, chief mechanical officer, with jurisdiction over locomotive and car departments. Headquarters, Hamilton, Ont. N. H. CRAIG, superintendent of car department, retired. Positions of superintendent car department and master mechanic abolished.

# Supply Trade Notes

K. W. BATTERY COMPANY.—*Robert C Cragg*, formerly midwest regional manager for Gould National Batteries, Inc., has been appointed executive vice-president, with headquarters at Skokie, Ill.

■

FARREL-BIRMINGHAM COMPANY, CONSOLIDATED MACHINE TOOL DIVISION. —*Robert R. Miller* has been appointed western sales representative, with headquarters at 6048 Lewis ave., Long Beach 5, Cal. *Leonard W. Lindh* has been appointed sales representative in New Jersey, Eastern Pennsylvania, Delaware and Maryland, with headquarters in Rochester, N. Y., succeeding *Robert L. Arms*, retired. *Harlan J. Hauser* has been appointed assistant sales manager at Rochester.

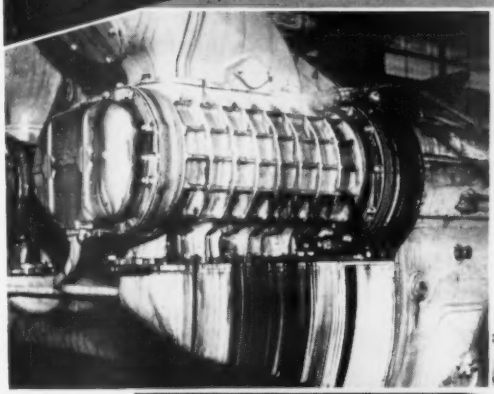
■

GRIFFIN WHEEL COMPANY.—*Curtis C. Drake*, sales representative in Denver, retired June 30.

■

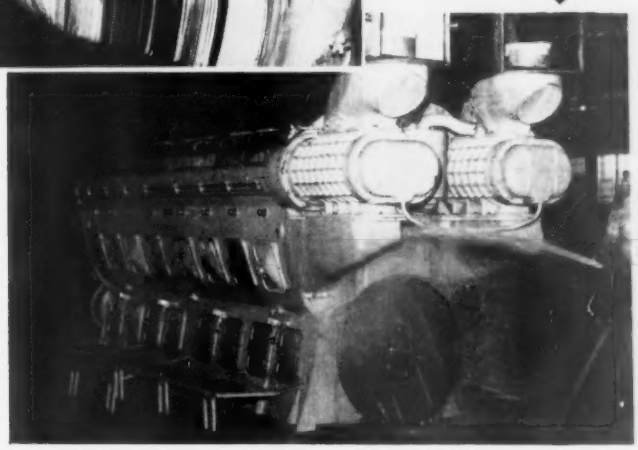
JOHNS-MANVILLE CORPORATION. —*Clinton B. Burnett*, J-M vice-president, has been appointed division general manager of the Packings and Friction Materials Division, succeeding *Francis J. Wakem*, retired.


**CLEAN 16 cylinder E.M.D. engine in only 40 minutes with reduced LIX DIESEL KLEAN HEAVY**



Just spray on reduced Lix Diesel Klean Heavy and watch the soil roll off.

Then rinse with warm water, air blow, and it's ready to paint.



**Leading railroads say . . . "Nothing cleans faster or better at less cost, than reduced Lix Diesel Klean Heavy."**

LIX CLEANERS were laboratory developed and tested, then field proven by years of use in many leading railroad shops.

Fewer man hours per job means greater volume of work without additional labor. LIX reduces the usual necessary cleaning time to a minimum.

Since LIX cleans better in less time the result is substantial savings in labor and material costs . . . exactly what progressive railroads are seeking.

If you want to get better results . . . save valuable hours, labor and material costs, then investigate LIX. We will gladly demonstrate in your shop.

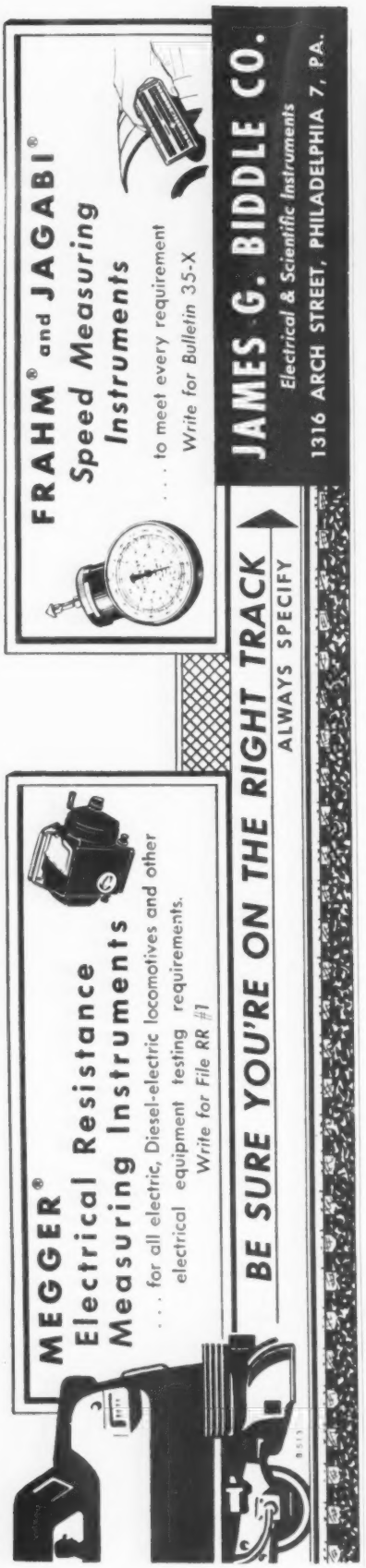
Lix Diesel Klean Heavy is non-toxic by Interstate Commerce Commission test standards.

*Manufacturers of Lix Diesel Klean Heavy and Lix Electric Equipment Cleaner*

THE Lix PRODUCTS OF RESEARCH CORPORATION (OF MISSOURI)

716 EAST 85TH STREET, Dept. RL-8
KANSAS CITY, MISSOURI

*"Leadership in Industrial Cleaning"*


FRAHM® and JAGABI®
Speed Measuring Instruments
. . . to meet every requirement
Write for Bulletin 35-X
JAMES G. BIDDLE CO.
Electrical & Scientific Instruments
1316 ARCH STREET, PHILADELPHIA 7, PA.
BE SURE YOU'RE ON THE RIGHT TRACK
ALWAYS SPECIFY
MEGGER®
Electrical Resistance
Measuring Instruments
. . . for all electric, Diesel-electric locomotives and other electrical equipment testing requirements.
Write for File RR #1


## SUPPLY TRADE NOTES

*(Continued from page 79)*

E. P. Bullard III

R. H. Waite

BULLARD COMPANY.—*E. C. Bullard*, has been elected chairman of the board and chief executive officer. *F. P. Bullard II* succeeds E. C. Bullard as president and general manager.

■

MACLEAN-FOGG LOCK NUT COMPANY—*Robert H. Waite* has been appointed railroad sales manager.

■

UNITED STATES RUBBER COMPANY.—*Henry Davis, Jr.*, district sales manager for mechanical good at Baltimore, has been appointed assistant manager of branch sales for the mechanical goods division, with headquarters in New York.

■

GENERAL MOTORS CORPORATION, ELECTRO-MOTIVE DIVISION.—"For developing the diesel-electric locomotive which helped revolutionize Amercan railroading," *Harold L. Hamilton*, retired vice-president and founder of Electro-Motive; *Richard M. Dilworth*, retired chief engineer; *Eugene W. Kettering*, director of research, and four sections of the Engineering Department of Electro-Motive—Controls, Electrical, Locomotive, and Mechanical Engineering Sections—will receive the 1957 Elmer A Sperry Award. The award will be presented at a specal luncheon on Thursday, October 10, during the fall general meeting of the American Institute of Electrical Engineers to be held at the Morrison Hotel, Chicago.

*Harold O. King*, factory branch superintendent in Jacksonville, Fla., has been appointed manager of that branch, succeeding *Alfred R. Walker*, retired.

■

CRUCIBLE STEEL COMPANY OF AMERICA.—*Albert J. McConnell* has been appointed assistant branch manager at Baltimore, Md.

■

WYANDOTTE CHEMICALS CORPORATION, J. B. FORD DIVISION.—*W. C. Van Keuren* has been appointed manager of the New York district office succeeding *A. J. Bettelheim*, retired. *John K. Stanz* of the Philadelphia district office succeeds Mr Van Keuren as district sales manager at Philadelphia. *Robert Haberl* has been appointed sales manager of the Kansas City district.

■

ALPHA MOLYKOTE CORPORATION.—A Technical Services Division has been organized to handle engineering information on molybdenum disulfide lubricants. The division is under the directon of *Harry S. Gerstung*.

■

GOULD - NATIONAL BATTERIES, INC.—*Harold M. Cragg*, specifications engineer, has been named St. Paul district manager of the Industrial Division.

■

KLEMP METAL GRATING CORPORATION.—*Gerald T. Hughart* has been appointed general manager at Chicago.

■

ACF INDUSTRIES, AMERICAN CAR & FOUNDRY DIVISION.—*Howard J. Russell* and *Edmund M. Grant* have been appointed district sales managers at Washington, D. C., and Chicago, respectively. Mr. Russell has been assistant to vice-president in the division's general sales office in New York, and Mr. grant has been a sales representative in Chicago.

■

SYMINGTON-GOULD CORPORATION.—*John W. Bergen* has been appointed assistant vice-president with headquarters in Chicago as heretofore.

■

NATIONAL MALLEABLE & STEEL CASTINGS CO.—The Charles H. McCrea award for unusual contribution to the industry was presented on June 13 to *Wilson H. Moriarty*, first vice-president of National Malleable, by the Malleable Founders' Society for his efforts in founding the Malleable Research and Development Foundation. The Foundation was organized last fall

*(Continued on page 83)*


## FOR SALE

**FAIRBANKS, MORSE CO. — OPPOSED PISTON DIESEL ENGINE SPARE PARTS**

**NEW-UNUSED — BIG SAVINGS**

Crankshafts (Upper & Lower)
Blowers
Vertical Drive Assembly
Bearings—Main, Con. rod
Connecting Rods
Pistons
Many other parts

***SERVICE PARTS DIVISION***
**A. G. SCHOONMAKER COMPANY, INC.**

| New York Address | California Address |
|---|---|
| 50 Church Street<br>New York 7, N.Y.<br>Ph. Digby 9-4350 | Ft. Spring Street<br>Sausalito, Calif.<br>Ph. Edgewater 2-1490 |

## FOR SALE

New General Electric Traction Generators

Manufactured 1955 and 1956—
Never installed—With Exciters

7 Model GT-591-A 1200 HP
15 Model GT-590-A1 1600 HP

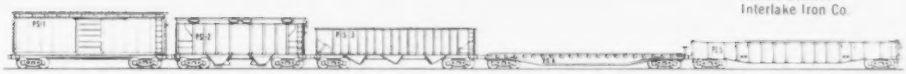
— wire or phone collect —

**C. Kirk Hillman Co., Inc.**
3201 First So. Eliot 6561 Seattle 4, Wash.

# PS-1
# PS-2
# PS-3
# PS-4
# PS-5

*Relied on by:*

Akron, Canton & Youngstown
Alabama Power Co.
Amer. Smelt. & Ref. (Mexico)
American Sugar Refining
Ann Arbor Railroad
Atchison, Topeka & Santa Fe
Atlanta & West Point
Baltimore & Ohio
Bangor & Aroostook
Bessemer & Lake Erie
Birmingham Southern
Boston & Maine
Buffalo Creek R.R.
Canadian National
Canadian Pacific
Central Soya
Central of Georgia
Central R. R. of New Jersey
Chesapeake & Ohio
Chicago, Burlington & Quincy
Chicago & Eastern Illinois
Chicago & Illinois Midland
Chicago & North Western
Chicago Great Western
Chgo., Milw., St. Paul & Pac.
Chgo., Rock Island & Pacific
Chgo., St. Paul, Minn'pls & Omaha
City of Chicago
Clinchfield
Columbus & Greenville
Copper Range
Delaware & Hudson
Delaware, Lackawanna & West'n
Denver & Rio Grande Western
Detroit, Toledo & Ironton
Duluth, Messabi & Iron Range
Duluth, So. Shore & Atlantic
Elgin, Joliet & Eastern
Erie
Escanaba & Lake Superior
Ferrocarril Del Pacifico
Florida East Coast
Ft. Dodge, Des Moines & South'n
General American Trans.
Georgia Railroad
Western Railway of Alabama
Grand Trunk Western
Great Northern
Green Bay & Western
Gulf, Mobile & Ohio
Illinois Central
Interlake Iron Co.



**PS-1** box car, **PS-2** covered hopper, **PS-3** open hopper, **PS-4** flat car, **PS-5** gondola

J. C. Corrigan Co.
Kansas City Southern
Lake Superior & Ishpeming
Lancaster & Chester
Lehigh Valley
Lehigh & New England
La Salle & Bureau County
Louisville & Nashville
Maine Central
Minn'pls, Northfield & South'n
Minneapolis & St. Louis
Mississippi Central
Missouri-Kansas-Texas
Monon
National Sugar Refining
Nashville, Chattanooga & St. Louis
New Haven
New York Central
N. Y., Susquehanna & Western
Nickel Plate
Norfolk & Western
North American Car Co.
Northern Pacific
Oliver Mining Co.
Pennsylvania
Phila. Qtz. of Cal.
Pittsburgh & West Virginia
Richmond, Fred'bg & Potomac
Rutland Ry. Co.
Santos a Jundiai
St. Louis-San Francisco
St. Louis Southwestern
Savannah & Atlanta
Soo Line
Seaboard Air Line
Southern Pacific
Southern Railway
Tennessee Central
Texas-Mexican
Toledo, Peoria & Western
Union Pacific
Union Railroad
U. S. Army
U. S. Navy
U. S. Trans. Corps
U. S. War Department
Utah Railway
Virginian
Wabash
Western Maryland
Western Pacific

## standardized freight cars

### from the experience of the world's largest carbuilder

More than eleven years ago, Pullman-Standard made a long-considered departure from traditional carbuilding concepts of custom design and construction, by introducing the first standardized freight car, the PS-1 Box Car. Pullman-Standard drew on its 80 years of carbuilding experience to conceive and engineer a car design that would serve equally well on all parts of the Great American Railway System. Modern mass production techniques, impossible to apply to custom-produced units, were developed for the production of this revolutionary car. These same economical, high-standard methods are now used by Pullman-Standard in the building of the complete line of standardized freight cars . . . the PS-2 Covered Hopper, PS-3 Open Hopper, PS-4 Flat Car and now, the new PS-5 Gondola.

The new PS-5 Gondola is the result of over eight years of exhaustive design and engineering effort. The Pullman-Standard concept of *flexible* standardization allows application of the economies and quality controls of mass production while providing sufficient design versatility to meet the varied use requirements of owners and shippers. Two standard PS-5 lengths are available with either fixed or drop ends and with a choice of floors.

Your nearest Pullman-Standard office will be pleased to supply you with full information on the complete line of P-S Standardized Freight Cars.

WORLD'S LARGEST BUILDER OF ROLLING STOCK

**PULLMAN-STANDARD**

**CAR MANUFACTURING COMPANY**

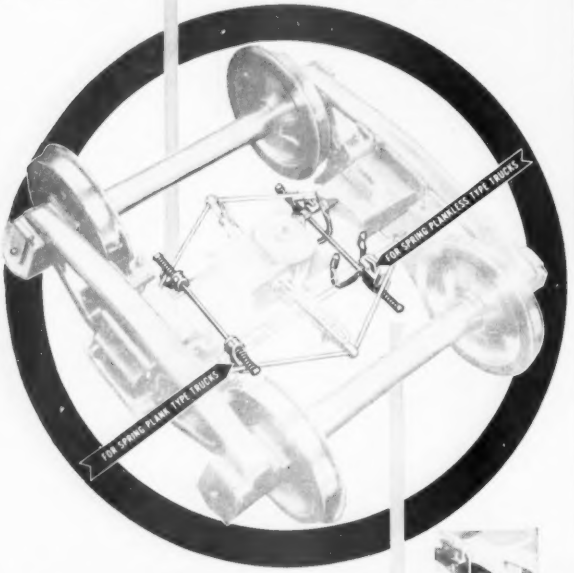
SUBSIDIARY OF PULLMAN INCORPORATED

**221 N. LA SALLE STREET, CHICAGO 1, ILLINOIS**

BIRMINGHAM, PITTSBURGH, NEW YORK, SAN FRANCISCO, WASHINGTON

in your rebuilding program

## the GRIPCO Brake Beam Safety Support



SPRING-PLANK TYPE

**gives added safety at minimum cost**

*can be designed for ANY Brake Beam*

The Gripco Brake Beam Safety Support provides the greatest safety at lowest cost. Its dependability has been proven over years of actual service. Gripco Safety Supports are low in original cost, low in application cost and low in maintenance cost, even after years of service.

SPRING-PLANKLESS TYPE
(Safety Loops Included)

1. Supports the brake beam in event of brake beam or hanger failure.
2. Holds brake beam in horizontal position.
3. Holds brake shoes in proper position in relation to the periphery of the wheel.
4. The brake release feature pulls brake shoes away from wheel contact instantly when brakes are released.
5. Prevents unnecessary wheel and shoe wear caused by dragging brake shoes.
6. Gripco Supports can be removed and replaced without removing nuts.
7. Gripco Supports also function as a foundation brake gear control.
8. Brake Beams, rods and levers are held in position under spring tension thus reducing false movements, chattering and wear of parts to a minimum.

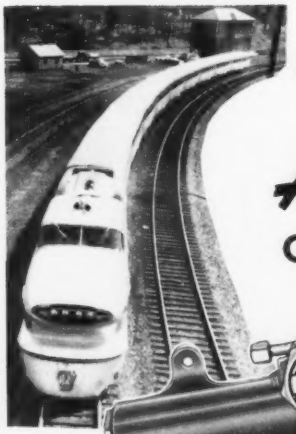
A.A.R. APPROVED—PATENTED AND PATENTS PENDING
OTHER GRIP NUT PRODUCTS AD NO. 110

Grip Lock Nut #1 | Grip Holding Nut #2 | Railroad Gripco Lock Nut #3

**GRIP NUT COMPANY**

*Serving American Railroads Since 1904*

106 BROAD ST., • SOUTH WHITLEY, IND.




PENNSY AEROTRAIN

JUMBO ROTARY-SEAL

## EQUIPPED WITH *AIR-PUSH* OF COURSE!

**SPRAGUE *AIR-PUSH* WINDSHIELD WIPER MOTORS ARE "STANDARD" IN THE INDUSTRY**

First in heavy duty windshield wiping equipment for a quarter century . . . . used on more than 90% of all diesel operated locomotives. *Safety starts with seeing* and Air-Push equipment keeps windshields clear in bad weather. Designed for top performance with minimum maintenance. Air-Push Replacement Kits, and Air-Push Repair Kits immediately available.

***WRITE FOR COMPLETE DETAILS!***

**Sprague DEVICES, INC.,**
**Michigan City, Indiana**

## WESTERN LOCOMOTIVE and CAR JACK

lifts capacity
loads easier

WESTERN has made the first major change in Locomotive and Car Journal Jacks by adding Timken tapered thrust roller bearings, replacing ball bearings. This major improvement means reduced friction, greater speed, easier operation and less maintenance . . . available in 25, 35 and 50 ton capacities. Aluminum or malleable steel housings available in 25 and 35 ton models.

8018

*Write for Bulletin No. 1957*

**WESTERN RAILROAD SUPPLY COMPANY**

*Division of Western Industries, Inc.*

2400-2434 S. Ashland Ave., Chicago 8, Ill.

## SUPPLY TRADE NOTES

(*Continued from page 80*)

to develop new products, improved processes, and more efficient production equipment for the malleable iron industry. The group now comprises six companies.

■

COOPER-BESSEMER CORPORATION—*Robert F. Lay*, vice-president and general sales manager, has been appointed vice-president and assistant general manager. *Grant C. Woodard*, assistant general sales manager, has been appointed general sales manager.

■

VANADIUM CORPORATION OF AMERICA.—*Lloyd W. Lewis*, district representative, has been appointed sales manager, eastern district, at New York; *William J. Killian*, district representative, has been named assistant district manager of the Pittsburgh district; and *John J. Green*, service engineer, has been appointed manager, wrought steel service, at Pittsburgh.

■

ARMOUR & CO.—*James P. Coughlin* has been appointed general sales manager, Cushioning Products Division, Alliance, Ohio.

In 1953 Mr. Coughlin was division manager of Welding, Westinghouse Electric Corporation, in Buffalo. Prior to joining Armour & Co. he was assistant to the president, Eutectic Welding Alloy Corporation.

■

PRIME MANUFACTURING COMPANY.—*W. H. Welty* has been appointed general sales manager with headquarters in Milwaukee.

■

OLIN MATHIESON CHEMICAL CORPORATION.—*R. Carter Dye* has been appointed general sales manager for Olin Aluminum, Aluminum division of Olin Mathieson.

■

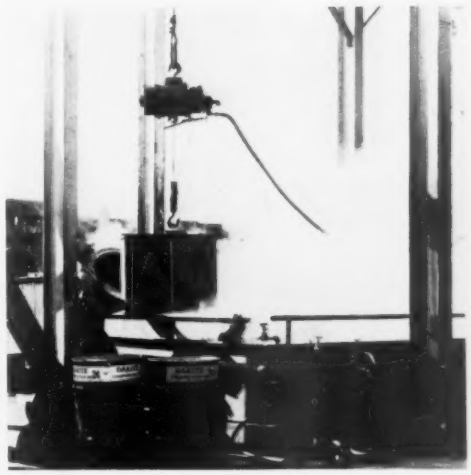
DEVILBISS COMPANY.—Direct factory branch facilities for Northern California are being moved from Santa Clara to a new building at 135 North 10th st., San Jose. New facilities have also been established in Los Angeles to serve Southern California and Arizona; in Seattle for the Pacific northwest, and at Salt Lake City for the Inter-Mountain area.

■

CRUCIBLE STEEL COMPANY OF AMERICA.—*Geo. W. Stamm* has been elected vice-president and general manager of sales, succeeding *James D. Glenn*, who has been relieved of his responsibility as vice-president-sales because of illness. *C. J. Ryan* has been appointed assistant to the vice-president-sales, with headquarters in Detroit. *M. J. Dempsey* succeeds Mr. Ryan as manager of the Detroit sales branch.

Mr. Stamm has been with Crucible since 1940 when he joined the St. Louis sales branch as a sales trainee. He was subsequently a tool steel service engineer at Syracuse, N.Y., assistant manager


# In PARTS CLEANING, too



Oakite gives you

# low-cost end results

**RECORDS PROVE** that in back shop tank cleaning operations, the solution that can clean at lower concentration and last longer gives by far the best economy.

For instance: When switching to an Oakite Cleaner, one shop found that it cost less to *charge* the tank, less to *keep it up*—so that in 12 weeks, savings totalled over $300.

Another railroad shop recorded a yearly saving of over $4100 on material cost alone for tank cleaning of diesel heads, liners, pistons and other parts in a solution of Oakite Composition No. 24. This solution was used for a full year with minimum upkeep, while previous cleaner had to be dumped and replaced every 2nd month.

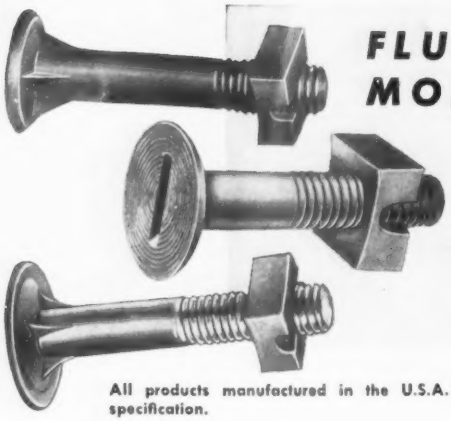
No matter what the maintenance cleaning job, there are *genuinely* economical, efficient Oakite materials to help you keep costs down. Get information on these and also up-to-the-minute methods and equipment from 56-page Booklet No. F-8055. Write Oakite Products, Inc., 46 Rector Street, New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE®
MATERIALS · METHODS · SERVICE
SCIENCE

RAILROAD DIVISION

Export Division
Cable Address: Oakite

Technical Service Representatives in Principal Cities of U. S. and Canada



FLUSH FIT MOISTURE TIGHT..

...WITHOUT COUNTERSINKING

Lewis sealtite car bolts

Each Lewis Sealtite car bolt has special "wood engineering" beveled head for flush, moisture tight, fit . . . without countersinking. Standard and large-head car bolts have patented fins that grip wood, prevent turning . . . slotted head bolt can be set with screwdriver. Available in Hot-Dip galvanized finish for "Long Life Economy," in black for low first cost. Call, write or wire for sample prices.

All products manufactured in the U.S.A. to A.S.T.M. specification.

Lewis BOLT & NUT COMPANY
504 Malcolm Ave. S. E.
MINNEAPOLIS 14, MINNESOTA

LOOK FOR THIS STAMP OF U QUALITY

and manager of the Cleveland sales branch, assistant to the vice-president-sales at Pittsburgh, assistant general sales manager and general manager of sales. Mr. Stamm received a B.S. in civil engineering from Washington University, St. Louis.

A new Crucible stainless-steel sales office and warehouse has been opened at 3400 Malone Drive, Camblee, Atlanta, Ga.

■

SYMINGTON-GOULD CORPORATION.—*Robert P. Messimer,* formerly service engineer, has been appointed sales engineer, with headquarters in New York City.

■

GOULD-NATIONAL BATTERIES, INC.—*Harold M. Cragg* has been appointed district manager of the Industrial Division at 1728 Roblyn ave., St. Paul, Minn. Mr. Cragg will supervise sales and service in Minnesota, Iowa, and South Dakota.

■

BALDWIN-LIMA-HAMILTON CORPORATION. STANDARD STEEL WORKS DIVISION.—*Thomas H. McKoy* has been appointed salesman in the Pittsburgh area which comprises western Pennsylvania, southern Ohio, western Maryland, and West Virginia.

■

AMERICAN BRAKE SHOE COMPANY.—The New York offices of ABS are now location at 530 Fifth ave., New York 6.

■

COPCO STEEL & ENGINEERING CO.—*Fred T. Roffe* has been appointed manager railway sales, with headquarters at 420 Lexington ave., New York 17. Mr Roffe was formerly with the Waugh Equipment Company.

### Obituary

FRANCIS HENRY SHEPARD, 82, pioneer in railroad electrification, died on June 22 in Bennington, Vt. Mr. Shepard retired in 1932 as director of heavy traction, Westinghouse Electric & Manufacturing Co., but continued as a consulting engineer.

## HELPS FROM MANUFACTURERS

The following compilation of literature—including pamphlets and data sheets—is offered free to railroad men by manufacturers to the railroad industry. To receive the desired information, write direct to the manufacturer.

CUTTING NOZZLES. Folder describes features of Oxweld cutting nozzles and how built and tested to give peak performance. (Write: *Linde Company, Division of Union Carbide Corp.*, Dept. RLC, 30 East 42nd st., New York 17.)

WELDERS. Four-page bulletin gives construction details and specifications for Idealarc 300, 400 and 500-amp combination ac and dc welders. (Write: *Lincoln Electric Company,* Dept. RLC, Cleveland 17.)

TEFLON HOSE. Bulletin IEB-26A describes Aeroquip 2802 industrial Teflon hose with "super gem" fittings for use with detachable fittings. (Write: *Aeroquip Corporation,* Dept. RLC, Jackson, Mich.)

HYDRAULIC CRANE. Four-page bulletin reports on use of Austin-Western hydraulic crane in Burlington repair yard at Lincoln, Neb. (Write: *Austin-Western Works, Baldwin-Lima-Hamilton,* Dept. RLC, Aurora, Ill.)

BLAST CLEANING. — "Wet Blast Cleaning and Finishing News" discusses and illustrates many applications of wet blasting, both in metal cleaning and finishing operations. Advantages of Liquamatte wet blasting enumerated. (Write: *Wheelabrator Corporation,* Dept. RLC, Mishawaka, Ind.)

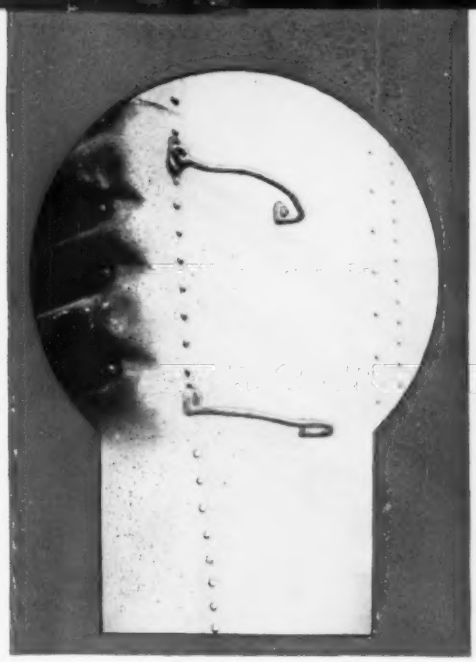
PROTECTIVE LININGS. 4-page brochure discusses application of protective linings and coatings and cites a case history where detergent-hauling tank cars were protected from premature failure at area of rivet heads and edges with a combination lining system of stainless steel and baked phenolic. (Write: *Protective Coatings Division of Metalweld, Inc.*, Dept. RLC, Scotts Lane and Abbottsford ave., Philadelphia 29.)

VERTICAL TURRET LATHES. 24-page catalog (VTL-3) presents entirely new concepts of operating speed, simplicity and convenience of company's line of 32-in 42- and 52-in. vertical turret lathes. Describes and illustrates new electric clutch controlled coaxial planetary transmission, also a variety of attachments and optional equipment, including system of tape automated numerical control of a vertical turret lathe and a precision racer control system. (Write: *Kaukauna Machine & Foundry Division of Giddings & Lewis Machine Tool Company,* Dept. RLC, Kaukauna, Wis.)

PIPE AND TUBING. 48-page catalog describes the Contour Trentwood process of welding stainless-steel and high-alloy pipe and tubing. Describes also Trent Tube products ranging in size from ⅛ in. to 40 in. in outside diameter, with hardness, conversion, size range, corrosion, gage and other tables and a glossary of tubing terms. (Write: L. E. Baker, sales supervisor, *Trent Tube Company,* Dept. RLC East Troy, Wis.)

ABRASION RESISTING STEEL.—Four-page revised Bulletin No. 11-3 describes a specially balanced composition for hardness and ductility, supplied in sheet and plate form for structures and equipment subjected to abrasion. Includes information on fabrication and heat treatment, performance records and illustrations of applications. (Write: *Joseph T. Ryerson & Son., Inc.*, Dept. RLC, Box 8000-A, Chicago 80.)

SELECTING POWER FOR PUMPING. 12-page illustrated handbook, No. ED-716, contains checklist of features necessary for dependable operation on pumping jobs, also description of engine requirements. Examples of efficient installations shown. (Write: *Caterpillar Tractor Company,* Dept. RLC, Peoria, Ill.)



# DAMAGED GRAB IRONS AND LADDERS

## CAN NOW BE REPAIRED FROM *Outside* THE CAR!

WHEN YOUR NEW OR REBUILT CARS ARE EQUIPPED WITH

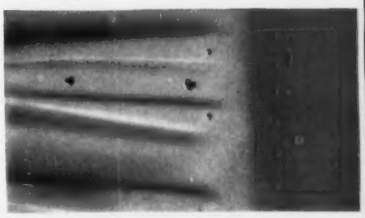
ELECTRO-GALVANIZED

# GT WASHERS

## DON'T DISTURB THE *LINING*

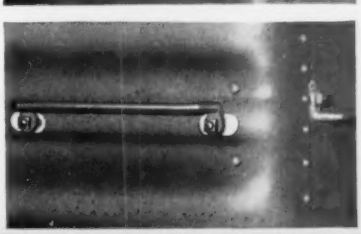
## DON'T DISTURB THE *LADING*

**VERY ECONOMICAL** to apply to new or rebuilt cars.



Keyhole slots punched in ends and side sheets. (Note flattened corrugation in end for use of washer.)

Grab-iron, with flat-neck bolt, nut and GT Washer are pre-assembled and inserted in keyhole slot.



When the flat-neck bolt is placed into position in the keyhole slot, the safety recession of the GT Washer drops into top of slot preventing the bolt-head from moving.

# MacLean-Fogg LOCK NUT COMPANY

5535 N. Wolcott Street • Chicago 40, Illinois
In Canada: The Holden Co., Ltd., Montreal

# How Metallizing saves money in railroad shops

**"Cold" metal build-up helps beat skyrocketing replacement costs—speeds maintenance jobs**

**Typical Railroad Metallizing Applications**

Engine crankshafts, mains, throws, fits • Engine cylinders, liners, liner flutes • Water jackets, camshaft bearings • Generator, traction motor, other armature shaft bearing fits • Compressor crankshafts • Traction motor end housings • Pump rods and shafts • Eroded or corroded portions of engine blocks • Car lighting generator pulleys • Dents and scatches in car bodies

**—practically any worn part repaired at only 15 to 20% replacement cost—get equipment back in service in hours, instead of days or weeks.**

**Some of the 28 major railroads using Metallizing:**

| | | |
|---|---|---|
| A.T. & S.F. | Missouri Pacific | Baltimore & Ohio |
| New York Central | Northern Pacific | Canadian National |
| Atlantic Coast Line | Pennsylvania | Chesapeake & Ohio |

**SPECIAL RAILROAD BULLETIN AVAILABLE—Illustrates and describes a number of these time-saving, money-saving metallizing applications. Data supplied by railroads using metallizing; photographs taken in user shops. Write for copy.**

METCO

**Metallizing Engineering Co., Inc.**

1117 Prospect Ave., Westbury, L. I., New York • cable: METCO

In Great Britain: Telephone: EDGEWOOD 4-1300

METALLIZING EQUIPMENT COMPANY, LTD – Chobham near Woking, England

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High grade small tools perfected through years of specialization.

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SMALL W TOOLS


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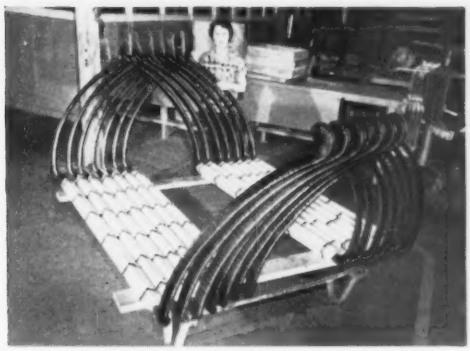
# National Replacement Coils

## Help Keep Vital Motors and Generators on the Job . . .

### . . . IN THE ELECTRIC POWER INDUSTRY

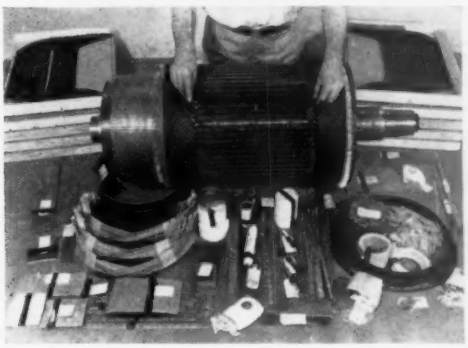


The photo shows part of a set of 54 stator coils for a large AC turbo generator. Rewinding equipment of this size is normally done on the job site. National can furnish the coils and send a full winding crew (or supervisory personnel with the customer supplying the labor), or National can supply the coils only (with the customer handling the complete installation).

### . . . IN THE MINING INDUSTRY

Mines use National coils in the motors which power mine locomotives, shuttle cars, conveyors and other equipment. National "grew up" in the coal fields and really understands the electrical maintenance problems of the mining industry. The photo shows a typical armature coil for a mine locomotive motor.

### . . . IN THE RAILROAD INDUSTRY



Some railroads send their traction motors to National shops for rewinding. Others perform the work in their own shops, using National replacement coils and winding supplies. The photo shows the variety of materials which go into a complete National rewinding kit for a traction motor armature.

### . . . IN THE STEEL INDUSTRY

The steel industry depends on National for replacement coils because rugged, reliable National coils have proved their ability to meet the test of tough steel mill operating conditions. The photo shows armature coils for a DC mill motor being dipped in a silicone varnish to protect them against deterioration due to high temperatures.

**When you need coils for any rotating electrical equipment, you can count on National for top quality, good service and a reasonable price. Ask your National field engineer for details on how National coils can help simplify your motor and generator maintenance problems. If you don't know him, just drop us a line and we'll arrange to have him get in touch with you.**

## NATIONAL ELECTRIC COIL COMPANY

**COLUMBUS 16, OHIO, U. S. A.** TRADE MARK

ELECTRICAL ENGINEERS: MAKERS OF ELECTRICAL COILS AND INSULATION—
REDESIGNING AND REPAIRING OF ROTATING ELECTRICAL MACHINES

# Number of "Roller Freight" cars up 43% in 15 months

6,671* "Roller Freight" cars—cars on Timken® roller bearings—have been placed in service or on order since February 1, 1956—an increase of 43%.

---

The total number of "Roller Freight" cars has soared to over 23,000*.

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Nearly one-third of "Roller Freight" cars are in general interchange service, helping to lick the hot box problem on all railroads.

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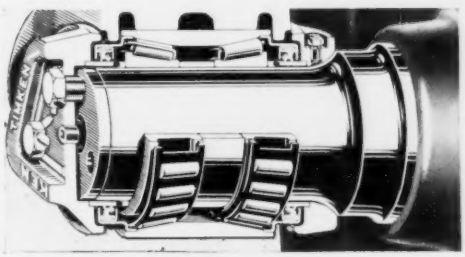
Today 61 railroads and private car owners are making the big switch to "Roller Freight". The Timken Roller Bearing Company, Canton 6, Ohio. Cable: "TIMROSCO".



*as of May 1, 1957

TIMKEN

TAPERED ROLLER BEARINGS ROLL THE LOAD